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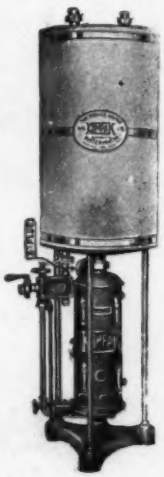

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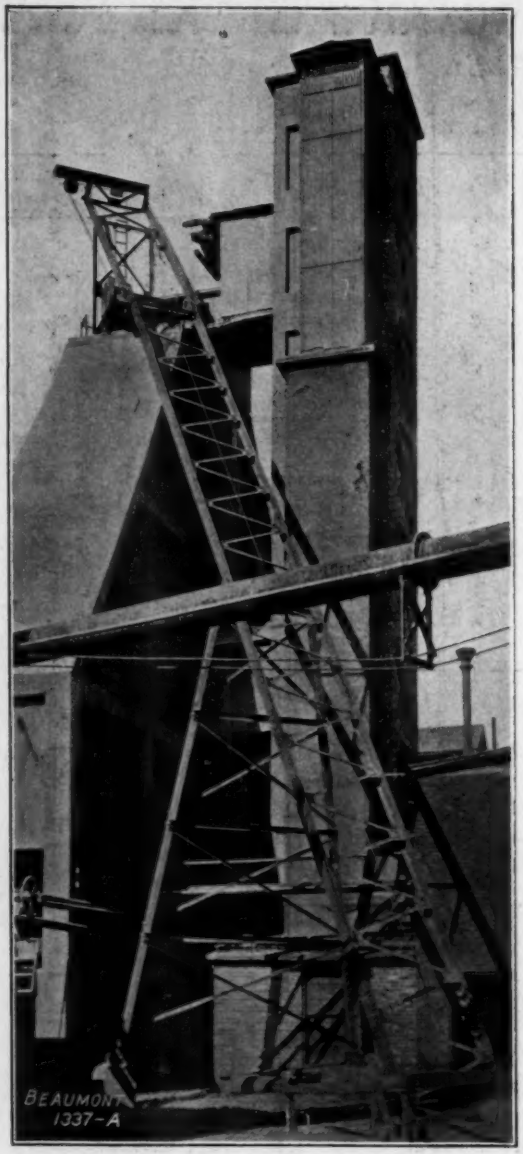

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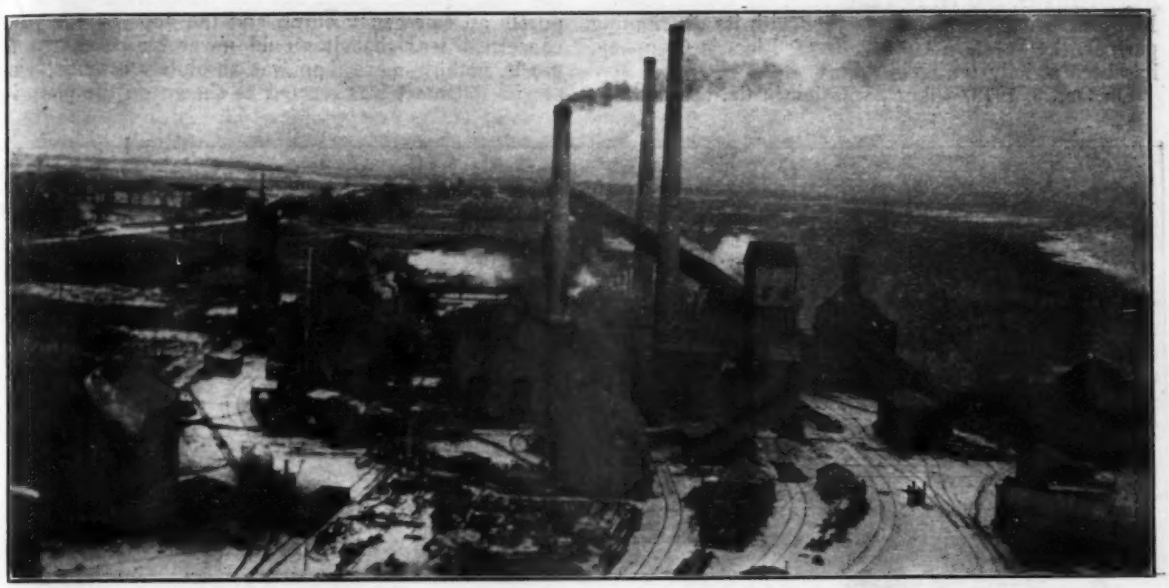


GENERAL LAYOUT OF PLANT—WATER GAS PLANT IN LEFT FOREFRONT WITH LOCOMOTIVE CRANE ELEVATING COKE TO OPERATING FLOOR

Operating a Water Gas Set Without a Relief Holder in Parallel with By-product Coke Ovens

Installed as Emergency Apparatus, Indications Point to Its Being Brought into Regular Use—Difficulties of Maintaining a City Gas Supply with Sole Reliance Upon By-product Ovens

By A. H. HARRIS, Jr.,
Superintendent, Coal Products Manufacturing Company, Joliet, Ill.

Operating a by-product plant as the sole gas supply of a community of 250,000 to 300,000 people brings up many interesting features that do not occur in ordinary coke oven or gas works practice, the chief one being the absolute necessity of continuous operation. This factor is accentuated when, with the average daily send out running in the neighborhood of five million feet, only eight million feet of holder storage is available, and this split up into four different units, separated from each other by twenty to twenty-five miles of high pressure mains. Of course, continuous operation of any gas making apparatus is desirable, but where a serious accident of one sort or another might in some cases mean the starting up of another water gas set, or the loss of a few million feet of holder stock, in the case outlined above it could easily become a calamity.

What a Shutdown May Involve

Not over seven million feet, and usually six to six and one-half million can be safely carried in the four holders, and this is materially reduced by peak loads early in the week, to be made up over Friday, Saturday and Sunday. The more or less complicated and heavy machinery, necessitated by the greatly increased amount of coal and coke to be handled over ordinary coal gas operation, present a menace of this kind continually, but by having a sufficient number and selection of spare parts on hand delays due to ordinary breakdowns are minimized, and only something out of the ordinary causes serious apprehension.

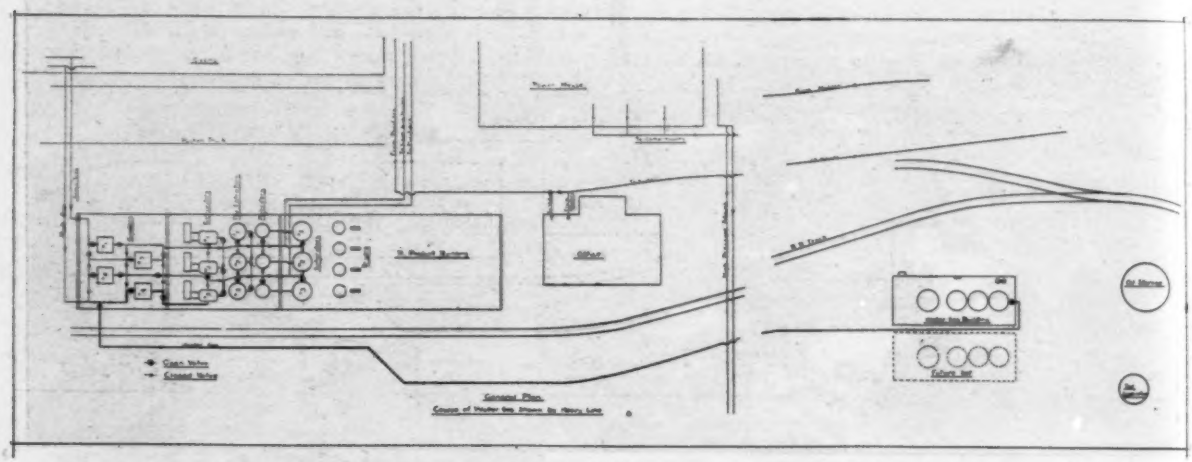
However, fate and nature sometimes take a hand in mortal affairs, and on two occasions the Coal Products Manufacturing Company, together with its distributing partner, the Western United Gas & Electric Company, has been strictly up against it.

On Oct. 3, 1913, a dust explosion in the coal storage bin over the oven completely wrecked this structure, and carried down with it the coal mixing apparatus, constructed on top of it, together with the conveyor gallery leading up to it. The plant was completely shut down for five days, and it was by only the most heroic measures that operation was recommenced in that time, as a temporary conveyor had to be constructed at the opposite end of the battery, the wreckage of the bin cleared away, and new collecting and cross-over mains installed. The most temporary repairs were made to everything, to make gas in the quickest possible time, and it was not until a new coal bin, conveyor and mixing apparatus had been constructed that the danger of a gas famine was removed. The gas stock on this occasion went down to 400,000 ft., it being kept up as well as that by the feverish operation of two small water gas plants, one in Joliet and the other in Aurora.

Again, in January, 1916, a combination of severe weather, frozen coal and conveyor breakdowns slowed down operations until the gas stock was pretty low, around 3,000,000 ft. A 6-in. snow fall then arrived, followed by a heavy thaw and a 24-hour rain, ending in a cloudburst. We were flooded out, pure and simple and it was 36 to 48 hours before any kind of operation was possible. Towards the end of this period, over a noon peak, only the most delicate handling prevented all the holders going flat, careful manipulation of the pipe line pressures enabling us to keep 6 in. of gas in three of the holders, and 10 in. in another. The small water gas plants again saved the day, but it was a narrow squeek, and the need of an emergency manufacturing outfit of some description was emphasized more than ever.

Construction

The result of these experiences was a three and one-half million water gas set, of the latest standard design of the United Gas Improvement Company, installed at the Coal Products plant. As this installation was to be purely an emergency outfit, and the hope of everyone concerned was that it would never be necessary to use it, nothing more than was absolutely essential was put in. The set was erected as shown on the plan, in a plain brick building, conforming to the architecture of the other plant extensions, with the idea that should it be deemed advisable at any future date to add one or more sets, they would be placed as shown and the building enlarged. Steam and water lines were run from the power house, the water tying in to the gas cooler line, the contention being that when the water gas plant was being operated, little or no gas would be made in the ovens, and the cooling water pressure, or most of it, would then be available for the operation of the hydraulic valves. The same idea was held regarding the steam supply, that the rest of the plant would not need the steam when the water gas did, so no additional boiler capacity was added. A size No. 9 type 4 Sturtevant gas blower, operated by a 195 hp. type E-5 Sturtevant turbine was placed in the corner of the building, and a 4 x 5 x 8 oil pump on the side of the wall. A 100,000 gal. oil tank was erected, together with a 1,200 gal. tar separator, as shown. These, along with the 24-in. pipe from the wash box to the cooler inlet, were the only additions made. This pipe is of a spiral clamped construction, very light, and comparatively cheap, both strong recommendations for its use here. At first glance it seems as if the set was faced in the wrong direction, with the wash box farthest



COURSE FOLLOWED BY WATER GAS SHOWN BY HEAVY BLACK LINE

OPERATING FLOOR—PORTABLE CONVEYOR PILES UP COKE RECEIVED FROM CHUTE IN WINDOW AT RIGHT—NOTE SIGNAL BUTTON ON STEAM PIPE

WATER GAS EXHAUSTER ENGINE WITH BY-PASS VALVE OPERATING LEVER ADJACENT TO THROTTLE WITH PRESSURE GAUGE AND SIGNAL PUSH BUTTON

away from the cooler. The regular auxiliary apparatus, however, relief holder, cooler, etc., if they were even installed, would have to go south of the generator house, due principally to the track layout, and it was also necessary to get the generator end of the building as close as possible to the track shown, in order to receive the coke. No fuel handling apparatus is used at all, the coke being elevated to a chute in one of the windows by the locomotive crane, shoveled onto a small portable conveyor we had lying around, which takes it away from the window and piles it up on the operating floor. From here it is shoveled into the generator as needed. Not very economical, perhaps, but plenty good enough when the gas itself, and not its cost, is the prime factor.

Operation

After some consideration it was decided that a relief holder, for the purely emergency use required of the outfit, was not necessary. It was appreciated that some manipulating of the exhausters would be required to handle the gas directly from the wash box, and when we got around to trying it out we found that the original contention was entirely correct, and then some. The oven gas exhauster layout consists of three Connersville machines, 57 cu. ft. per revolution each driven by a 15 x 14 Erie City simple engine. Ordinarily one machine is operating on the rich gas, and one on the lean, the usual Hontoon governors in combination with Northwestern governors on the ovens giving us a very good pressure regulation. The 24 in. pipe from the water gas was first connected directly into the rich main, at the inlet to the coolers, and when we were ready to make gas, the third exhauster was put on the rich gas and run very slowly. This caused the other rich machine to slow down, the governor handling it very nicely, up to this point. A man was posted at the window and when he got the signal from the water gas building that a run was about to be got on, we watched the pressure gauge on the inlet to the coolers to see it come along. We were not kept very long in doubt as to its coming, as this pressure changed in a few seconds from 1½ in. suction to about 10 in. pressure, and the cooler seals started to blow. The exhausters were speeded up, the governor on No. 2 (rich) machine, not passing near enough steam, necessitating the opening of the by-pass valve all the way, but this pressure could not be reduced. It was very evident that the water gas was displacing all of the oven gas, and this latter was being forced out into the air at the oven doors, lids and stand pipe caps. The excessive back pressure necessitating the raising of several of these last to bleed the gas away. Several trials soon convinced us that water gas could not be made that way, at least as long as the ovens were operating.

Pipe Changes to Remedy Difficulty

Some pipe changes were then made in the cooler room, so that the water gas could be led directly through one cooler to No. 3 exhauster without coming in contact with the oven gas until the exhauster was passed and it had reached the entrance to the tar extractors. A 6-in. by-pass line was run around the ex-

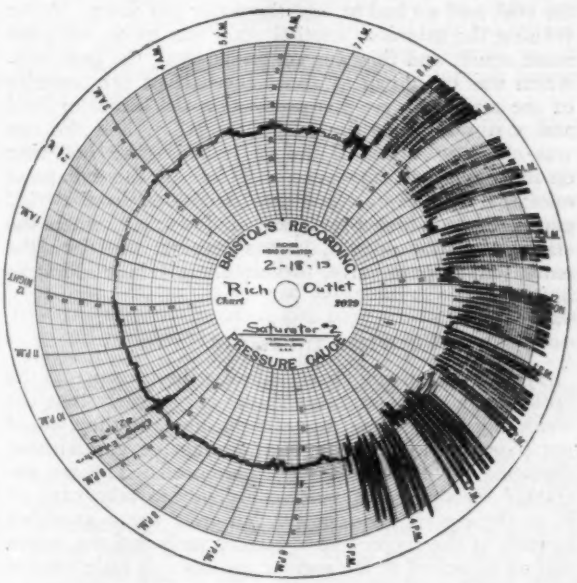


CHART SHOWS PRESSURE AT OUTLET OF RICH SATURATOR —INCREASE THAT OCCURS WHILE WATER GAS IS BEING MADE

hauster, with a quick opening valve inserted therein, its stem being connected to a system of levers that extended adjacent to the exhauster throttle valve. A "U" gauge connected to the cooler inlet was attached to the steam pipe, in easy view, and a push button put near it, connected to a bell on the water gas operating floor. Another bell was placed just outside the exhauster room window, with its push button on the operating floor, attached to the steam pipe.

We were then ready to try it again, and when the heat was up in the generator, the exhauster was started and run slowly, the man at the throttle opening the by-pass valve through the lever system so that as near an even gauge as possible was carried at the inlet to the water gas cooler. Too much suction at the cooler inlet pulled in air through the wash box seal, and too much pressure forced the oven gas out through the stack valve, so that it required quite a little manipulation of these valves to keep this pressure where it belonged.

All Went Well for About Two Minutes

Two rings on the signal bell gave notice that a run was about to go on, and this was answered by the exhauster operator, to show the water gas maker that he had received the signal. The exhauster was speeded up slightly, to get a start, and as soon as the gauge showed pressure, the by-pass valve was shut, and the throttle opened to bring the exhauster to the necessary speed to take the gas away. The increased volume of course raised the pressure at the exhauster outlet, requiring more steam for the rich oven exhauster than the governor would pass. So this one had to be operated on the throttle as well. Everything went along nicely for about two minutes, except the occasional blowing of the cooler seal, till the increased pressure blew all of the liquor out of the rich saturator through the seal, and we had to shut the water gas down. After refilling the saturator another start was made, with the same result, and this was continued until the generator steam was cut down to about one-half of the capacity of the machine. At this production the saturator held and a run was put through all right. When the run was about to come off the gas maker gave one ring on the signal bell, answered as before by the exhauster operator, and as the pressure decreased in the "U" gauge, the exhauster was slowed down, till, when the stack valve was opened, it was necessary to open the exhauster by-pass valve, to keep the machine idling as before.

Purifiers the Weak Link

The accompanying chart, showing the pressure at the outlet of the rich saturator shows very clearly that the weak link in our chain was the purifiers, as they would not pass the large and sudden amount of gas without throwing the back pressure experienced. The tar extractor seals were of sufficient depth to take care of it, so these were not touched, but four feet was added to each of the cooler and saturator seals and the steam and oil increased to the regular amount. A little trouble was experienced with the exhauster, but after the cooler was properly regulated to bring the gas down to the required temperature, its speed could be cut and everything went along nicely.

Accurate results by this method of operation can hardly be figured, but everything points to average operating economies. The amount of water gas made is more or less of an estimate, as it is not metered separately and can only be determined by the difference between the gas passed by the meters with the set operating and the average oven production over the same period. With the set operating days only, the difference between the night and day make gives it more or less accurately. However, as the object of the installation was to make gas in a hurry, and lots of it, and get it into the holder, we can safely say that this has been satisfactorily attained. It now appears that it may be necessary to run the set on other than emergency occasions, and a relief holder, along with a cooler, exhauster and direct connection to the purifiers is in prospect. Some sort of fuel handling apparatus is also on the fire.

Miners' Safety and Health Almanac for 1919

Miners' Circular No. 24 of the U. S. Bureau of Mines. Paper; 9 x 6 in.; 45 pages; illustrations from drawings. Compiled by R. C. Williams, Assistant Surgeon, U. S. Public Health Service. Obtainable from the Superintendent of Documents, Washington, D. C. Published December, 1918, in co-operation with the U. S. Public Health Service.

The care and feeding of infants would seem rather a far cry from coal mines and similar topics of adult concern, and so likewise would such subjects as infantile paralysis, mosquitoes and the care of the teeth; but they are all dealt with impartially, along with explosives, mine rescue apparatus and methods of making coal dust harmless, in this circular.

At one time, now fortunately left behind, the consideration of domestic matters in a semi-technical publication devoted to our mines and the men who work them would have called forth large flocks of raucous chuckles and would have brought a ray of sunshine into the dull, cheerless existence of our honest workingman by providing him with a cheap source of innocent merriment. But such days are gone, and it is universally recognized by progressive nations that the very best way to assure maximum efficiency in any sort of undertaking is to keep the men who actually perform the labor in good health and spirits. And as it is humanly impossible for anyone, save a few ascetics, hermits and East Indian fakirs, to remain cheerful and sunny in spite of a faulty digestion or the worry over a sick child at home, the purpose and pertinence of such a publication are only too apparent.

In addition, then, to the customary almanac and calendar, with its accompanying collection of 365 wise sayings and helpful counsels (one gets 366 during leap-year), this Government circular also contains much valuable advice on sanitation, safety measures, avoidance of "fake" patent medicines, safeguards against communicable diseases, and other matter important to human beings in general and miners in particular. The almanac-calendar device, as has been the case since Benjamin Franklin demonstrated it to the country at large—and even before that—insures every page coming under the miner's notice, and those whose operatives have not already received copies should take steps to see that a supply is requested. The cost is as scant as the patriotism of a draft-evader, the publication being distributed free of charge to those interested.

Lessons the War Emergencies Have Taught New England Companies

J. Arnold Norcross in Complete Analysis of Conditions Met with in That Section Numbers Among Bright Features the Fair-Minded View the Public Manifested Towards Rate Increases

Owing to the complete breakdown of transportation, both rail and water, the New England gas supply was in a desperate condition a year ago, as a consequence of the war, in the opinion of J. Arnold Norcross, as expressed in his presidential address before the New England Association of Gas Engineers. Stocks of coal and oil held over many years against emergency were exhausted, and we were forced to live from hand to mouth, not knowing when or whence the next shipment would come. Shortage of labor and its inefficiency seriously cut down the supply from our regular coal contractors and forced us to buy all sorts of coal from all sorts of people. Much of it never came, and some which did was so bad that we wished it had not. Government orders interfered with our shipments, the railroads confiscated the coal on the way to us, and it was no uncommon thing for our gas works to get down to less than a week's supply of coal on hand. Some, indeed, came within a few hours of closing down.

Real Advantage Derived from Possession of Dual-Process Plants

The gas oil supply was just as uncertain. Enormous shipments abroad, shortage of tank ships, congestion and confusion on the railroads, brought many a gas manager and his undertaking to the verge of complete shutdown. There were many instances of only a few hours' supply of gas oil at the gas works and cases came to my knowledge of horse-drawn tank wagons rushing any kind of oil to a gas works about to shut down. Fortunate was the man in those days who had both coal gas and water gas plants of ample capacity for he had two chances to the other's one. It was unlikely that both oil and gas coal would run completely out at the same time, and if the anthracite failed the coke sales could be interrupted and coke used for water gas making.

Labor Following the Lure of the Pot of Gold

It was under these conditions that a meeting of directors of the association was held on April 1, 1918. The fuel situation was thoroughly discussed and a "coal and oil committee" was appointed to carry out suggestions looking towards ensuring sufficient coal and oil to maintain the supply of gas in New England, and to co-operate with J. J. Storrow, the United States Fuel Administrator for New England. The committee consisted of A. M. Barnes, D. D. Barnum, C. H. Manchester, Burton Smart and your president. I will not describe the work of the committee as Dr. Wing is to report on this in detail at this meeting, but I cannot refrain from expressing my sense of obligation to J. J. Storrow for the consistently untiring efforts, unbounded zeal and splendid ability which he devoted to our needs. We owe him a debt which it would be difficult to overestimate.

The labor situation was a source of endless worry. We had already lost many men to the colors when the National Guard was absorbed into the army, and it was impossible to replace them in the face of the competition for labor by the munitions plants, Government contracts on cost plus percentage basis, Government shipyards and others. Voluntary enlistment and the army draft from time to time further depleted our forces until it was impossible to properly conduct all of the usual operations of the gas works, and many things were left undone which were not for the moment vitally necessary.

The remaining labor was restless and discontented. Wages were raised again and again, but no matter what was paid, the men seemed obsessed with the idea that somewhere else much more could be had.

Stories of the fabulous earnings of munitions workers and others set the brains of the workers on fire and a veritable "wanderlust" possessed them. Thus there was a continual moving of men from job to job and consequent inefficiency all around.

The few old employees one could hold, no longer kept up their former interest and loyalty and they too, in many cases, became as unsatisfactory and difficult as the new hands selected from the wandering fortune hunters who called at our gates.

The workingman evidently thought that "der Tag" had come and conducted himself accordingly.

I think that I am safe in saying that no gas manager regrets the improvements in working conditions granted to the men in these stressful times, nor does he begrudge the increases in wages necessary to offset the shorter hours, and the high cost of living during the war period. There is, however, a sense of bitter disappointment that men who have worked for us steadily and contentedly for many years, and in most cases enjoyed our consideration and regard, should sever the connection with little or no sign of regret, or if they stayed, should put forward exorbitant demands and render a minimum return for what they received.

New construction was well-nigh impossible during the past year. Shortage of material and labor and their excessive cost, Government restrictions on both material and financing, and the high rate and scarcity of money made it necessary to avoid extensions of works and mains and to make the most of all existing plants.

As the year wore on, the supply of coal and oil became more assured. The War Industries Board placed the gas works high up on the priorities list. The U. S. Fuel Administration had become thoroughly organized, and its systematic distribution of the output of coal and oil made itself evident to our great benefit and relief. Before the end of the year the gas works of New England had, with few exceptions, a normal

stock of coal and oil with which to meet the winter's demands.

Women for Men

The labor situation on the contrary became steadily worse. We began to substitute women for men in light labor, and were forced to plan more extensive use of women throughout our undertakings. Whether we could have accomplished this in the heavier and rougher tasks is a question which will probably never be answered. It was done in England. Women were trained to be water gas makers, retort house stokers and machine runners, coal and coke handlers. They even fired boilers, and clinkered furnaces. I believe that our women should have responded to the call, but let us give thanks that the war ended and both men and women were spared the hardships, so bravely and wonderfully met in England.

The cost of production and operation, already excessive, kept steadily rising during the year. All of our companies were forced to raise their rates. Some had to increase a second or a third time. The increases from pre-war rates totaled generally from 20 cents to 30 cents per thousand. It is notable that with very few exceptions there was no public opposition to the advanced schedules. The increases in rate were generally advertised with details of the increased cost and other facts to justify the higher rate.

The public was convinced of the justice of the step and gave an exhibition of fairmindedness as surprising as it was pleasing.

In this connection we should recognize the wisdom and fairness of our New England Public Utility Commissions. They understood the difficulties and necessities of the situation, they appreciated the fact that good service depends on adequate means, and that a public service corporation without financial credit is not merely a disappointment to the stockholders, but a menace to the comfort and prosperity of its city. They had the courage of their convictions and acted upon them.

Had it been otherwise, many of our companies, big and little, would now be in the hands of receivers, and the public must have suffered through shortage of gas, bad quality and poor service.

Increased Demand an Anxiety

Another source of anxiety which came to many of us, was the greatly increased demand for gas due to the new factories and large influx of munition workers into our cities, the use of gas for house-heating when coal was scarce or unobtainable, and the large increase in the industrial application of gas. Some of this business will stay with us, a permanent asset, but much of it fell away at once on the signing of the armistice. My own company was experiencing an increase in send-out of nearly twenty per cent above the preceding year, but this fell off to almost nothing after the armistice.

It was a striking anomaly for the ambitious gas manager, in the habit of putting forth every endeavor to increase his sales of gas, to suddenly have business thrust upon him, and to find himself in a position where the extra sales were more of a liability than an asset.

Is it not food for thought, that when the opportunity of a lifetime knocks at our door it finds many of us short of materials and plant and thus unable to embrace it through circumstances for the time being entirely beyond our control.

One lesson stands out clearly—that we should always have a large surplus of coal, oil and plant in reserve for unlooked for emergency and that all of our producing capacity should be kept in perfect repair ready for the demand which may or may not come.

By-products to the Fore

The by-products of the gas works have never come into such prominence as during the last year. There was a market for all the coke which could be spared from the gas works operation and the prices obtained were higher than ever before. Ammonia was high in price, and there was not enough to supply the demand. Tar products of all kinds were in great demand and the prices realized were good. Those who produced benzol and toluol reaped a return out of all proportion to the quantity, and in addition had the satisfaction of knowing that they were helping in the supply of explosives to win the war.

So great was the need of toluol that the Government called upon the gas works of the country to scrub out all possible from the gas made. Government plants were erected for this purpose in most of the large gas works of the country and in a large number of medium size. The gas industry responded loyally to the call and in most cases entered contracts by which they operated the Government toluol recovery plants at net cost. Gladly and without recompense we took up the extra burden and the difficulties in distribution known to accompany the operation.

The importance of saving and using all of our by-products has been impressed upon as never before, and the lesson learned will continue to make itself felt henceforth. It is my opinion that gas works equipped with aqua ammonia or sulphate plant, tar distillery and solvent plant, were able by reason of the extra return to make gas about ten cents per thousand less than works not so equipped, who sold the crude by-products to others to refine and sell at a good profit. The cessation of hostilities unfortunately was followed by a slump in business which has temporarily made it impossible to market these products at any price, but this passing condition should not mislead or discourage. It is unlikely that the cost of crude materials and labor for gas making will ever return to pre-war levels. If, therefore, we are to do our best for the public whom we serve, we must strive for the uttermost efficiency in use of materials and labor and must work up our by-products to the last possible dollar.

Another fact which has become more apparent than ever before is the desirability of having both coal and water gas apparatus in our works. In the days when oil was cheap, rich carbureted water gas could be made more cheaply than lower heating power coal gas. The low first cost of water gas plant, almost unlimited elasticity of production, the large production per man employed, and the general simplification of the gas works, its operation and distribution problems tempted many to rely entirely upon this form of gas manufacture. War conditions soon changed the relative cost of the two kinds of gas. Notwithstanding the quite general abolition of candle power standards and adoption of

reasonable B.t.u. standards the cost of coal gas has been of late lower than that of carbureted water gas. The oil producers report that the continual increase in demand for oil is not accompanied by a commensurate development of new production. The price of oil then must continue high. If this is so, every gas works of reasonable output must install a coal gas plant or work at a disadvantage as to the price at which it can sell gas. The well known advantages of the water gas plant makes it absolutely indispensable to every gas works, but the present and probable economic conditions require that all but the smallest works should have a coal gas plant as well.

An innovation of the last year was the so-called Daylight Saving legislation. There was a general anxiety lest the cutting down of the hours of artificial lighting would materially affect our volume of business. This fear appears to have been unfounded. The general experience has been that other and larger factors concealed the loss entirely or that it figured of no serious moment to the gas undertakings.

Other war time measures of unusual interest were the "heatless week" and the "heatless Mondays" which followed. New England was so nearly exclusively engaged on essential war work, that our industries were largely exempt from the order and the effect on the gas industry was there almost negligible.

The New England Gas Standard

Perhaps nothing which happened to the New England gas industry in 1918 was of more importance than the establishment by our Public Utility Commissions of lower heating power standards. In Massachusetts and Connecticut a minimum of 528 B.t.u. was established. This last may still be too high, as some maintain, but it seems to me to be about right. We should have a standard which can be maintained with the usual qualities of gas coal and existing plants without recourse to expensive and wasteful enrichment and one which gives satisfactory service in existing gas appliances. The value set for Massachusetts and Connecticut fulfills these requirements perfectly. Experience with it thus far gives no evidence of any increase in consumers' bills by reason of the reduction. All lighting appliances are more easily adjusted and maintained, mantles remain white, fuel appliances are more efficient and the general report among our engineers is highly favorable from all points of view. We have demonstrated that the 528 B.t.u. standard gives good service to the consumer, and that there is a saving to the companies in making it as compared with former higher standards. This benefit is shared by companies and consumers. We must aim at the standard which will give the greatest service to the consumer per unit of cost. I believe that we have come very near to this in the standard adopted in Massachusetts and Connecticut.

We have now passed successfully through what I believe is the most difficult period in the experience of living gas engineers. We have suffered shortage of materials for manufacture and repairs, we have operated with fewer men than would have seemed possible, we have put up with poor quality of the scant material and labor obtainable and in addition we have faced financial problems which threatened to overwhelm us. Our resources and ability have been taxed to the limit, and yet not one of our plants has shut down and the essential needs of our people have been fully met.

Demand for Ability and Hard Work Without Limit

We must now devote ourselves to the future. The conditions ahead of us call for the exercise of ability and hard work without limit. The policy of conservation so firmly established during the war must be applied with all our might. We must make the most of everything we have. The by-products have helped some of us through the last two years. We must now more than ever save them and work them up into salable form. The war demand and high prices for them have vanished, but we must find or create a market for them. I would especially urge you as far as possible to work up a local market for everything you produce. You thereby avoid a destructive competition and can divide with the consumer the saving in transportation charges which are now higher and more seriously burdensome than ever. If you sell in your neighbor's territory, you prevent him from doing so and force him to find a market in some other man's—perhaps in yours. I cannot conceive of a community big enough to support a gas works and not big enough to absorb most of the by-products, if the market is thoroughly developed. Your public must be educated to use what is produced in their midst. This is especially important in the case of coke. The domestic trade in our cities is a small fraction of what it should be, and because of the almost universal gas range is at best only a winter business. But what about the industries? Coke can be used wherever there is a power plant, if you know how to burn it to best advantage. There are numerous places where coke can be advantageously substituted for anthracite and even for fuel oil: Bread and pie-baking ovens, galvanizing and sherardizing furnaces, annealing and core ovens, gas producers, brass furnaces, varnish-making kettles, blacksmiths' forges where fine work is done, case hardening mufflers, etc. Another large possibility is to prevent freezing of plaster and concrete in new buildings. Coke breeze when burned by steam-injected forced blast is a perfectly satisfactory boiler fuel and can be used either alone or mixed with steam coal in hand or machine stoked boilers. I have known of coke breeze being thrown on the dump for lack of knowledge of how to use it. The same line of reasoning can be applied to tar products, ammonium sulphate and aqua ammonia. A large demand for benzol and toluol is predicted as a result of the establishment of the dye industry in this country during the war, but it is not necessary to wait for that. Benzol, toluol and solvent naphtha, now a drug in the market, can be sold mixed for motor fuel and is worth in that use about twenty per cent more than gasoline. Here again there is a local market always at hand to absorb all we can make. We do not have to create the market, but we do have to utilize it, and a determined push will do it. Another advantage in thus thoroughly working up the local possibilities is to broaden our service to our public, and at the same time make our business less dependent on the sale of gas alone. I believe that in this direction lies low net cost of gas manufacture. Our duty to our consumers demands that we spare no effort to that end.

Steaming Retorts a Remarkable Development

One of the most remarkable developments in gas manufacture during the war is the "steaming" of vertical and other retorts as very generally adopted in England. The need for conservation in gas manufacture was much greater there than with us and this process appears to be the only thing that carried many of them through. The process really reduces itself to the making of coal and water gas in the same apparatus. This is an old ideal and as yet no successful apparatus has been designed for its complete realization. "Steaming," however, is a step towards this end. The steam and water gas in the retort permeate the pores of the coke, assist volatilization, surround and protect the volatile products and rapidly carry them away from the zone of destructive decomposition. A paper will be read on this subject at this meeting, so I will merely point out that the English report a yield per ton of gas coal of 16,000 to 23,000 cu. ft. with heating value of 510 to 460 B.t.u.; or B.t.u. per ton of coal 8,000,000 to 10,000,000, as contrasted with normal working of about 7,000,000 B.t.u. per gross ton. Expressed in another way, the yield was increased 25 to 50 per cent with a sacrifice in heating power of 4 to 12 per cent. At the same time, the yield of ammonia was increased 20 to 30 per cent, the tar made was 10 to 20 per cent more, and the retorts no longer had to be laid off for scurfing. A start was made towards adopting this means of augmenting the yield from gas coal in several gas works of New England but the process has not received the attention at our hands which I believe it deserves.

Introducing Labor-Saving Machinery

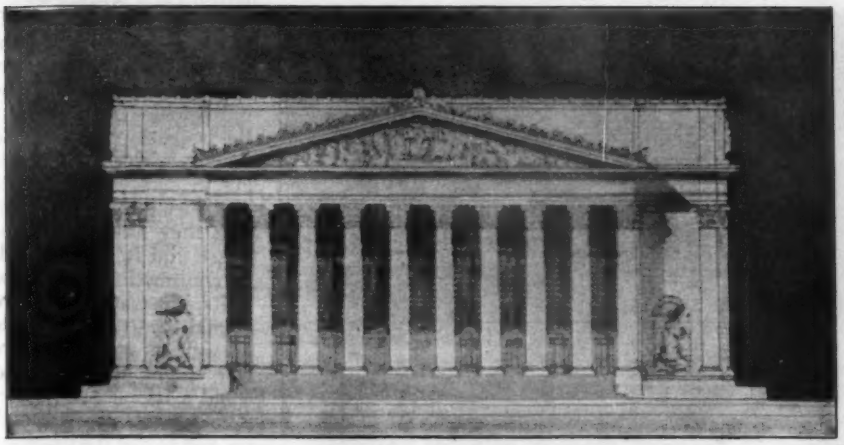
Under the conditions which confront us we must do everything to increase the efficiency of all the apparatus we have, and adopt every improvement likely to decrease manufacturing cost. If trade revives in the near future, as predicted by almost all authorities who write on the subject, labor will soon again be scarce. We must therefore introduce labor-saving machines far more generally than heretofore—wagons and car loaders, locomotive cranes, conveyors, steam shovels, automatic stokers, trenching machines, caulking machinery, etc., should be adopted by every good sized gas works. Coal, oil and labor are now more than double the former prices while capital costs little more. We must therefore use more capital and so equip our business as to use less materials and labor. We should apply the same principle to the office and introduce addressographs, calculating, adding and accounting machines and other labor saving inventions.

Getting the Employee Better Acquainted with Management

We should also strive to promote a better relation with our employees by every means possible. Recent events have awakened the workingman to a sense of his power which, I believe, he will never forget. In other respects he is no more enlightened than before. There is then but one way in which to check his unreasonable demands and that is education. I do not refer to the so-called "book learning," but to the knowledge of his community of interest with his employers. Teach him that the company is a complete little democracy made up of hundreds or thousands of small investors who have clubbed together to accomplish something which a few alone could not do. Teach him that the company is not cold capital but warm human beings. Show him that he can be one of them if he chooses. Let him see that the managers are servants of these people and that they feel a personal responsibility in doing well by those who work for them as well as those for whom they work. The successful manager in times to come will be he who feels himself as much a trustee for the interests of his employees as for his employers. Establish personal relations with the men—show an interest in them and develop the same attitude in foremen and all who hold authority under you. The man is rare who will not respond in full measure to a kindly personal interest. If it is a new attitude, as it may be some of us, he may at first be suspicious; but let him once feel sure that your interest is genuine and kindly and he will give good measure in return. I believe that much of the time and money now put into supervision could be saved, if but a small part of the time of those in authority from top to bottom was expended in this way. *You* know that happiness does not depend on money and that other things in life are more precious, but the workingman too often believes that in money lies the whole secret of happiness. His employer is his only source of money and he has become insatiable. Give him the things that money cannot buy and you will satisfy his craving for human recognition. He will learn his lesson, pay you back in kind and find contentment where he now sees naught but strife. Any plan of profit sharing which results in placing stock of the company in his hands, savings arrangements by which he acquires gas stock by instalments from his weekly pay, offers of new securities of the company on easy payments and favorable terms, are all excellent means towards a better understanding and an increased sense of community interest. Such plans encourage thrift and accumulation of property by the men who take part. They thus improve their condition from year to year, become solid citizens and more valuable employees, and look forward with a hopefulness born of confidence.

Relations with Public

Our relations with the public have heretofore received their full share of attention. The day of the "public be damned" policy is too remote to be remembered by most of those present. A high sense of obligation and responsibility towards the consumer has been developed in our industry. Due partly to pressure from without, partly to a more intelligent appreciation of the business value of a satisfied customer, but, I believe, largely because there is among us a sincere ambition to be useful to the people of our community, the modern gas manager is thoroughly awake to his interest and his duty and strives to render to his public the best service in his power. It is to this end that we must do everything possible to bring down the cost of gas making; but we must go further, and do something to increase the return to the public in the appliances of utilization. There has been too much salesmanship and too little science in connection with the adoption of appliances for sale. I fear I am safe in saying that not one of us here is sure that he sells the most efficient gas range to be had, and that the same is true of water heaters,



NEW HAVEN POST OFFICE IN WHICH 595 GAS OUTLETS ARE PROVIDED

room heaters and fireplaces, and many other appliances. We should put an end to this condition and select for our public the most efficient gas burning appliances in existence. This policy would do wonders to stimulate the makers and inventors and lead to rapid advances in efficiency of utilization. This is one of the benefits we may anticipate from the new and powerful American Gas Association, whose prospectus promises "to advance to the highest efficiency the methods of utilization." I have for years advocated the establishment by the gas industry of a central laboratory for gas research in general and for testing out and reporting on the efficiency of every gas appliance offered for sale. If the new association undertakes such an enterprise let us give it our support and profit by its work. Our consumers will thereby benefit greatly, and our industry will grow and broaden beyond our dreams and find favor with all men.

In the foregoing address I have tried to picture the New England gas industry as it has been during my year of office and have offered suggestions as to how the difficult conditions which now face us should be met and overcome. The way ahead may appear hard but the gas industry has progressed steadily for over one hundred years, always broadening its scope and increasing its usefulness. It has done so because it has filled a great public need. This need is now more apparent than ever and is felt throughout the civilized world. It is therefore certain that the difficulties surrounding it can but temporarily restrain its growth. Great as its past has been, its future promises still greater things. Let us then press on with confidence to the success which beckons and reap our sure reward.

A New Lighting Scheme

An excellent plan for evening publicity, which would be especially valuable to the merchant who has small window space and wishes to call attention to several lines at the same time, has been adopted by Pohls, Baltimore, Md. It is a slight variation of the alternating electric signs, which flash and disappear. The window has no back wall, but suspended from the ceiling is a large framed card, 2 x 3 ft., calling attention to gas mantles. Attached to the back of this was a row of electric bulbs. The window itself was lighted by bulbs in the ceiling. In the window was the figure of a housewife adjusting a mantle to a gas jet, a card giving the familiar slogan: "Twice the light; one-half the gas." On the interior of the store was the reclining figure of a young woman reading a magazine, by whose side was a gas heater, and an adjustable gas lamp, with the card: "For solid comfort try *Gas* for heating and lighting." The lights in the window were arranged on the alternating plan. For a minute the entire window would be illumined in a flood of light. Then it would be in darkness, and at the same time the lights on the back of the frame would flash out, throwing a blaze of light on the reclining figure in the interior of the store. A moment later the window lights would flash on again, and thus everyone that passed had the opportunity of noting two effective, though widely differing gas conveniences. The novelty of the display, with the catchy signs that accompanied it, gave far greater publicity than would have been gained under the ordinary lighting system. The scheme could be adopted by any merchant at little cost, as the models were simply borrowed from a local department store, and the balance of the settings are such as are carried in stock by all dealers in gas appliances.

Various Reasons Why Gas Is Best Light for Churches and Other Places Where Large Groups of People Congregate

Philmer Eves Starts Off to Tell Wherein Such Installations Particularly Profit Gas Companies and Ends by Supplying Most Convincing Reasons Why, from the Viewpoint of Aesthetics and Utility, No Church Should Be Without It

From an educational standpoint, the use in public places of the regular stock of the newer lamps and standard up-to-date glassware, as well as of special fixtures which it is sometimes necessary to have, is of considerable advantage. It enables congregations of representative people, church and public officials and others to become familiar under favorable conditions with modern gas light and the latest equipment, declared Philmer Eves, of the New Haven (Conn.) Gas Light Company, in a paper presented at the recent convention of the New England Association of Gas Engineers.

Adverse criticisms and objections to lighting with gas, generally based on acquaintance with obsolete burners and antiquated fixtures, can best be effectively checked and counteracted by these permanent demonstrations of the gas lighting of to-day.

The conditions in our city are probably not different from those in any other city. It has been your experience as well as ours that the gas lighting business in the larger buildings has occasionally been lost by the light-

THE UNITED CHURCH ON THE GREEN, IN NEW HAVEN, HAS A BEAUTIFUL PRISM CHANDELIER. THE PROBLEM WAS TO TRIM THIS COSTLY FIXTURE IN KEEPING WITH THE GLASSWARE EFFECT AND TO PRODUCE AN ADEQUATE ILLUMINATION WITHOUT GLARE.

ing systems being changed without notice or warning. These changes have in some cases been made through lack of knowledge, on the part of the customers, of present day gas lighting. The loss has probably not been occasioned by any fault in the maintenance service received by the gas company. More likely it has been brought about where the company's maintenance plan has not been utilized and where the lights have been ignorantly handled by a careless custodian.

The change has come about mainly, however, through the neglect of the gas company to educate the clergy and officials in the superior qualities and advantages of gas and in the remarkable progress that has been made in attractiveness, adaptability, utility and efficiency of modern burners and fixtures. Salesmanship of the character that can deal with this lighting problem has either not been at hand or has not been utilized. The result has been the unexpected and lamented loss of some of the most desirable patrons.

How Old Systems May Be Gotten Out

The remedy is found in an investigation of lighting systems in use and in taking systematic steps to get old types of gas lighting appliances replaced by modern installations and, where necessary, in re-piping or altering the piping system. It is realized that to leave the old and often unsightly fixtures and old style lamps in an otherwise beautiful church or fine public building is to place the gas company and its service in the most detrimental light.

The steps to rectify these adverse conditions in our case, take the form of personal interviews with the pastors and officers of the churches and with the officials and owners of public buildings. An effort is made to interview the individual members of the board or committee so that at any future meeting to consider the lighting question all will feel that they have been consulted and fully informed. In conjunction with these visits, illustrated literature is mailed to the officials as well as to any others who might be brought to wield a friendly influence. Some of this printed matter and of the illustrations of samples of present-day available gas fixtures, lamps and glassware of various kinds has been prepared by our company. Supplementary advertising in the public newspapers and by other agencies, by means of which modern gas lighting has been brought to public notice, has added its share in gaining favorable attention. A written or personal request to be permitted to attend the board meetings and the presentation to the board of a definite proposal, previously worked out with great care, to install a modern system for a certain stipulated sum, with the privilege of taking advantage of a deferred payment plan if desired, has generally proved to be the most successful procedure. This proposal has also in some cases been accompanied, where practicable, by an offer to place sample fixtures so that a practical though incomplete demonstration of the difference between the old method and the new one suggested may be seen. The offer has also enabled the authorities to gain the support of the parishioners and others who would be called upon to share in paying the cost and thus to feel more justified in giving the order.

Advantages Given Towards Securing Private Dwellings Business

At two of the churches, the pastors invited their congregations to attend special meetings to hear what the gas company's representative had to say about gas lighting. These meetings, convened on the initiative of the ministry, and other opportunities of close contact with members of the churches probably offer the most desirable and effectual means of placing modern gas service in its proper light.

The information on modern gas lighting conveyed during these conferences and our present day claims for gas light need not be enumerated at a convention like this. It may, however, be truthfully said from

(*Continued on page* 197.)

AMERICAN GAS ENGINEERING JOURNAL

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As the Journal Views It

An Encouraging Sign

Like all other industries, the gas industry is on the threshold of a new era; an era in which it will have to accustom itself to viewing things from a different angle than it has viewed them in the past.

Some industries will be slow in thus readjusting their viewpoint. Such industries will of necessity stagnate to a degree during the period of transition.

The most promising indication that the gas industry will not be one of these that has recently come to our attention is the presidential address of J. Arnold Norcross at the annual convention of the New England Association of Gas Engineers, which is published, almost in its entirety, in this issue.

There is revealed in it a full realization that times have changed, that we face new conditions; and there is revealed further that the speaker is sympathetic towards them and glad that they have occurred.

A decade ago rising cost of labor would have set us all to wagging our heads dolefully as at an unmitigated misfortune. Mr. Norcross expresses the conviction that there is no manager in his section but is pleased with the change.

The cost, of course, must be carried beyond the gas company. It cannot, of course, be an elastic bulging bag of wealth that can flow forth to any degree without a corresponding inflow.

The public, if educated to the relationship between

fair wages to utility workers and rates, can, in nine cases out of ten, be depended upon to pay increased prices for gas with cheerful acceptance. This cannot be so, however, if the gas company worker relative to other workers is a sort of bloated plutocrat. But this has never been and, we may be certain, never will be.

Mr. Norcross asserts that the New England public and the New England regulatory commissions have demonstrated a fairness of viewpoint in this particular.

It is tragic, however, where labor costs mount higher and regulatory commissions are not sufficiently broad-visioned to see the obvious. Under such conditions the utility man is placed in a situation wherein, in honesty, he must concede labor is entitled to higher compensation, but he cannot, being human, rejoice that it has attained its deserts; for who can rejoice in his own destruction?

Mr. Norcross likewise outlines a policy that should be followed in the relationship between the workman and the management that is in harmony with all that those who might be termed expert in such problems have recently preached.

Incidentally, as he follows out his thesis, he gives us first a peep into a soul—that of the utility operator—then a full revelation. Within the walls of our offices we have oftentimes gotten such glimpses into the hearts of men with whom public service is a fetish and money a secondary consideration. Such a type is magnificent, yet somehow has always seemed to us, in a way, pathetic.

In these parts of his paper, and in others, the author has strayed away from the conventional and has produced *literature*.

That such a paper could have been prepared by such a man, for such a purpose, is a proof beyond questioning that the gas industry will go into the new era not unwittingly and fitted out with strange trappings, but sympathetically and with understanding.

Mr. Norcross is essentially of the engineer type of gas man, the type that demands facts rather than theories and is inclined to get out the pencil and figure. If the obvious and assured return does not compare with the estimated cost it is reluctant to plunge. In this case no one can know definitely what the return will be. And the income to meet cost must be uncertain, since it must of necessity depend on the vagaries of public opinion. To accept without fear the exactions of the future implies a sound confidence in the essential honesty of the great bulk of human beings.

The AMERICAN GAS ENGINEERING JOURNAL believes Mr. Norcross' confidence well placed. If it is not, the future ahead would be dark indeed.

The real value in this paper is not merely academic. It is a pathfinder contribution of highly constructive character. A national policy for the gas field based on it could be formulated that would redound most beneficially to the whole gas industry

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A Reason to Rejoice that Developments in the Industrial Branch Have Been as Great as They Are

There are companies in the land that, despite high costs, were compelled to enlarge capacities to meet the ordinary demands of excessively swollen populations. Such populations are beginning to shrink with as great a rapidity as they gathered.

The spread of the B.t.u. standard and the greater recovery of by-products have combined to do more in a few months than gas men have been able to accomplish in years towards routing the open flame burner.

Such developments and others have cut radically into many companies' loads. Something must be found temporarily to fill up the gap.

Thanks to the degree to which the industrial fuel branch had been developed up to the beginning of the war, such an outlet lies in many cases almost across the street.

Vastly stimulated industrial activity with consequent shortage of other fuels turned willing ears to the urgings of the industrial gas salesman.

Smiles were deftly concealed under the cover of a yawn as he lidated on the economies of cleanliness, pleasant and healthier working atmosphere, reduction in floor and storage space required, reliability of supply, elimination of ashes, etc.

The manufacturer had heard these stock phrases before, but with less patience. He had been skeptical and doubted if such economies balanced the increased fuel cost.

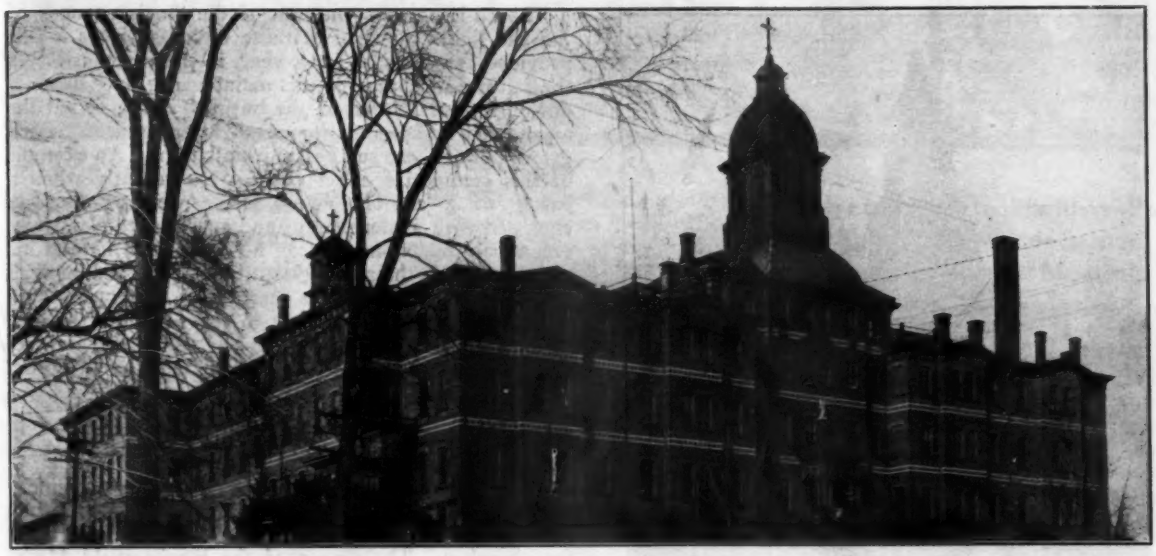
As a matter of fact in the stress of wartime he still doubted. But his prime interest had changed from being concerned with dollars and cents to that of being concerned exclusively with getting heat regardless of expense.

The war and the war's perplexities gave industrial gas its chance to "show off." Fortunately, appliances, systems and furnaces had been developed to the degree that it was ready to grasp its big chance.

No longer must industrial gas be sold on intangibles. It has had an opportunity to prove itself in actual operation.

There is an industrial fuel market in the smallest territory big enough to support a gas plant, a bigger market perhaps than most plants could supply even working on it exclusively.

It is there to be sold. If you need it, go out and get it. It is yours for the seeking.



ST. FRANCIS ORPHAN ASYLUM, NEW HAVEN, HOUSING SOME 400 CHILDREN, HAS WELSBACH SEMI-INDIRECT GAS FIXTURES IN THE SISTERS' HALL AND LARGE AND SMALL INVERTED LIGHTS IN THE SCHOOL ROOMS AND OTHER PARTS OF THE BUILDING

Various Reasons Why Gas Is Best Light for Churches and Other Places Where Large Groups of People Congregate

(*Continued from page* 194.)

experience that the argument that has been found most appealing is that relating to the supreme *quality* of modern gas light. It is no small advantage to have in a place of public assembly a light that is not only abundant but is the most restful and comforting to the eye. A pastor instantly recognizes the force of this unchallenged claim.

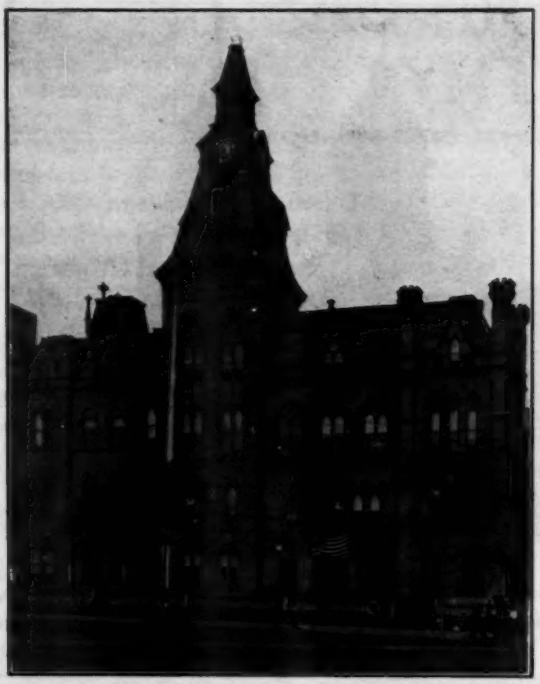
And in a place where large numbers of people congregate, the immense advantage of having an adequate illumination which, in its operation, is pre-eminently valuable as a means of aiding the *ventilation* by the warm currents from the burners drawing up the vitiated air above the breathing level, is also an effective and weighty fact. The *reliability* of gas and its much lower operating cost also appeal strongly.

The ubiquitous retort about the "convenience" of other lighting systems is generally silenced by a recital of the successful methods of lighting and extinguishing the recommended outfit of new lamps. On this point instruction of the janitor, a man of some influence, must not be overlooked, for it is frequently found to be this very much interested individual who has not been previously acquainted with the latest turn-on and turn-off attachments.

Moonlight Effect of Burning Pilots

At such times as these we have often felt that the gas industry, the gas journals and salesmen have not made enough of the forceful fact that at the Panama-Pacific International Exposition in San Francisco, a

SUMMERFIELD M. E. CHURCH IS EQUIPPED WITH A CENTRAL SEMI-INDIRECT GAS BOWL FIXTURE OF GEORGIAN DESIGN, HAVING 15 MANTLES AND IS OPERATED BY A CHAIN LIGHTER



MODERN GAS LIGHTING FOR THE NEW HAVEN CITY HALL WAS SECURED AGAINST KEEN COMPETITION. LARGE 15-MANTLE SEMI-INDIRECT GAS FIXTURES LIGHT THE COURT ROOMS, AND OTHER LARGE AND SMALL UNITS THROUGHOUT THE BUILDING

Grand Prize was won by the gas exhibit as the best lighted exhibit in the entire exposition.

Since that eventful date the rapid development of the efficiency and artistic attractiveness of gas lighting appliances has given assurance that, with energetic effort on the part of gas companies and the co-operative support of fixture manufacturers, lighting with gas will continue to hold first place for quality, hygienic value and lowest operating cost. It is therefore realized that the more prominent gas lighting installations which are now being made offer justifiable encouragement and incentive to the manufacturers to make the larger units and higher class single arm and two and three-arm brackets for this class of lighting service. The makers of lamps and mantles may see here the need of a new type of gas lamps of high candlepower for side wall lights, and if possible with an artistic reflector for lighting large spaces under galleries and similar locations where a number of the present styles of smaller units would involve an additional number of piping outlets to secure adequate illumination. There would also be a reduction in the number of pilots and the consequent saving of time and gas. We have found, however, that even the pilot has been looked upon as a decided advantage. The custodian of one of the churches in which we had equipped modern gas lights with the Welsbach "C-C" pilot said that the parishioners had remarked upon the beautiful effect in the church at night after the lights except the pilots had been extinguished and that it was so much better to have this moonlight glow than to see the church in absolute darkness.

The all-important question of the "maintenance" of the gas lights installed in these buildings is as a rule provided for, at least for a year, in the contracts. On the faithful discharge of this maintenance duty depends not only the retention of the business obtained but the augmented and cumulative gas lighting business which grows out of these successful installations. An example of this cumulative effect came to us recently when a pastor of a church, whose home we had recently equipped with modern lamps and appropriate glassware, voluntarily telephoned to say how delighted he and his wife were with the new lights. He was so pleased with them that at the close of a meeting of the Ladies' Aid Society, he invited all present to come and see the new lights and then added:—"from the complimentary remarks that were made you will be having a lot of orders from my people."

How a Pastor Views It

The following unsolicited letter from a prominent pastor reveals the feeling of satisfaction and gratitude which has been earned by the gas company in lighting the churches. The pastor of the Summerfield Methodist Episcopal Church under date of September 27, 1918.

"I wish to take the liberty of expressing to you my great satisfaction with the new equipment which your company has just installed in our church. In the first instance I was prejudiced against the use of gas for lighting purposes on so large a scale; and even during the process of installation anticipated nothing exceptional; but I must frankly confess that the result exceeds all expectation.

"The light is abundant yet mellow. The fixtures are befitting a church and the effect is churchly in every way. The attractiveness of the church is enhanced many fold. It is a truly inviting building at night. All with whom I have spoken seem to be in hearty agreement with my sentiments.

"Though I do not know whether you are accustomed to receive such letters as this, yet I could not forbear to acknowledge this fundamental improvement which you have made for us, together with the uniform courtesy and generosity received from your company. I wish simply to say that all this is appreciated and the new lighting system a success.

"You have my permission to make such use of this note as you desire.

(Signed) "R. L. Tucker."

The same minister said in effect that a poorly lighted church looked gloomy and repellent, but a place of worship having pleasing illumination was cheerful, brought a larger attendance and had a decided influence on the service, the sacred surroundings being enhanced by the soft, restful radiance. With such sincere and valuable testimony as this can we hesitate to make still more strenuous efforts to give more of this appreciated service and secure the gas lighting business under modern conditions in these prominent places? Surely, knowing the supreme service that gas light can render to-day, are we not fully justified in waging a determined war against the ignorance, unfounded prejudice and mistaken ideals that prevail? We should not only win the lighting of churches and public buildings but acquire a generous share of the lighting of every house and place of business.

New England Association Affiliated with American Gas Association—Members Appointed

At the annual meeting of the New England Association of Gas Engineers, a letter was read from the American Gas Association on the matter of affiliation, which was referred to a committee and approved.

As a result of the affiliation the following have been appointed to membership to the different sections of the American Gas Association: A. M. Barnes, Cambridge, accounting section; C. E. Paige, Malden, technical section; H. C. Crafts, Pittsfield, commercial section; and Harry A. Norton, Boston, manufacturing section.

Consolidated Buys Plot for Uptown Office

The Consolidated Gas Company of New York has bought a plot 100 x 95 at the northeast corner of Audubon Avenue and 166th Street, title to which has been held for some time in the name of the City Real Estate Company. The purchase was made with a view of building some time in the future a structure to house the Washington Heights branch of the company.

Two More Vacancies on Missouri Public Service Commission After April 15

The Missouri Public Service Commission, which has been without a secretary for many months, will have two more vacancies on Apr. 15. The terms of William G. Busby, chairman of the commission, and E. J. Bean, who served first as counsel for the body and later as a member of the commission, will expire on that date.

Both Chairman Busby and Mr. Bean are aspirants for reappointment, but a hot fight is indicated by the activities of members of the legislature. The salary of a member of the Missouri Public Service Commission is $5,500 a year and the term is six years. The general counsel gets a salary of $4,500 a year.

West Virginia Will Limit Sale of Gas to Outsiders

Senate Approves Conservation Measure—Bill Passed

The Steptoe bill to conserve natural gas for the use of West Virginia consumers in preference to outsiders passed the Senate recently by a vote of 19 to 10. It provides that all gas companies shall satisfy to the limit of their ability demands made upon them by domestic and commercial State consumers for gas before shipping any of their supply outside the State.

The measure was passed by the House of Delegates recently, and it is now ready for the Governor's signature.

City of Lakeland May Buy Gas Plant

The City Commission of Lakeland, Fla., at its recent meeting called an election for Apr. 1 to vote upon the purchase of the Lakeland Gas Company. The company has offered all of their holdings and stock on hand excepting the present site of the office to the city for $170,000, and will accept the cash or twenty-five-year bonds bearing 6 per cent interest.

In August the election held by the citizens of Lakeland decided that they would authorize the city to make an effort to purchase the plant and this is the result.

THE INSPIRATION GAS & OIL COMPANY, to acquire oil and gas lands, timber lands, etc. Capital $300,000; F. C. Hedges, A. F. Wheeler, Lexington, Ky.; Curtis Pigman, Henderson, Ky.

Chicago Stockholders Pay High Tribute to Samuel Insull at Annual Meeting

The stockholders of the Peoples Gas Light & Coke Company of Chicago paid high tribute to Samuel Insull, chairman of the board of directors at the annual meeting held Feb. 10. This tribute came despite the fact that he stated it had been as impossible to pay dividends as to "fly to the moon."

Mr. Insull deplored the fact that there had been so many complaints from the consumers. He asserted that he had "dominated the affairs of the Commonwealth Edison Company for the last quarter of a century," and expressed the hope that he would be able to create such a feeling of good will between the gas company and the consumers that he would have a following greater than any political party in Chicago.

"If I can get my customers to believe in me and to feel that I have honest intentions and that I stand first for them and that I will protect their interests and render them the service they expect, I will have a following stronger than any political following in the city," declared Mr. Insull. "We are trying our best to separate the gas company and politics. It seems that in all the criminations and recriminations that have been uttered by candidates for city vices none of them has come forward with any reconstructive suggestions. You will see no discussion of the relative costs and will find no reference in any of the things they have said concerning the investors' right to make money.

"The worst that can be done against the gas company is to see the daily insinuations that its directors do not possess common honesty. The countless anonymous letters I am forced to open every day bear evidence of this. When we have succeeded in steer-

ing the interests of the company into a place where there is common good will between the customers and the company, then the politicians will leave us alone."

After announcing the resignation of E. J. E. Ward, vice-president, who has been with the company for thirty-two years, Mr. Insull went into the troubles of the past year. He said that every energy was being bent toward securing efficiency and restoring the company to a more favorable standing with the public. There had been many difficulties which offset this effort, particularly wrong meter readings and complaints to the board of public utilities. The decisions of that board, had not always been fair to the company.

While Mr. Insull was scathing in his bitterness towards the employees of the company who had been responsible for the failure to interpret correctly the readings of the meters, he paid tribute to the employees of the company who have set its "high standard of efficiency since the signing of the armistice," which seems to have been the turning point in affairs of the company. The tribute he gave his associates was no less complimentary than a vote of thanks that was unanimously tendered to Mr. Insull for his services to the gas company. Condemnation and taking over by the city of the gas plant, to be operated as a municipal plant with gas at greatly reduced cost is a plank in the platform of one of the candidates for Mayor of Chicago.

Income Tax Due

Returns Must Be Made on or Before Mar. 15—Bill Provides Heavy Penalties

Work on the collection of $6,000,000,000 has been begun by the Bureau of Internal Revenue. This is the estimated yield of the new revenue bill. The income tax provisions of the act reach the pocketbook of every single person in the United States whose net income for 1918 was $1,000, or more, and of every married person whose net income was $2,000 or more. Persons whose net income equalled or exceeded these amounts, according to their marital status, must file a return of income with the collector of internal revenue for the district in which they live on or before March 15.

Here is what will happen to them if they don't: For failure to file a return on time, a fine of not more than $1,000 and an additional assessment of 25 per cent of the amount of tax due.

For "wilfully refusing" to make a return on time, a fine not exceeding $10,000, or not exceeding one year's imprisonment, or both.

For making a false or fraudulent return, a fine of not more than $10,000, or imprisonment for not more than one year, or both, together with an additional assessment of 50 per cent of the amount of tax evaded.

For failure to pay the tax on time, a fine of not more than $1,000 and an additional assessment of 5 per cent of the amount of tax unpaid, plus 1 per cent interest for each full month during which it remains unpaid.

In addition to the $1,000 and $2,000 personal exemptions, taxpayers are allowed an exemption of $200 for each person dependent upon them for chief support if such person is under eighteen years of age and incapable of self-support. Under the 1917 act, this exemption was allowed only for each dependent "child." The head of a family—one who supports one or more persons closely connected with him by blood relationship, by marriage or by adoption—is entitled to all exemptions allowed a married person.

The normal rate of tax under the new act is 6 per cent of the first $4,000 of net income above the exemptions, and 12 per cent of the net income in excess of $4,000. Incomes in excess of $5,000 are subject also to a surtax ranging from 1 per cent of the amount of the net income between $5,000 and $6,000 to 65 per cent of the net income above $1,000,000.

Payment of the tax may be made in full at the time of filing return or in four instalments, on or before Mar. 15, on or before June 15, on or before Sept. 15, and on or before Dec. 15.

Revenue officers will visit every county in the United States to aid taxpayers in making out their returns. The date of their arrival and the location of their offices may be ascertained by inquiring at offices of collectors of internal revenue, postoffices and banks. Failure to see these officers, however, does not relieve the taxpayer of his obligation to file his return and pay his tax within the time specified by law. In this case taxpayers must seek the Government, not the Government the taxpayer.

Gas Meter that Can Be Read as Easily as Mileage on Automobile Speedometer Suggested for Peoples Company

The production by manufacturers of a gas meter that will make meter-reading a simple matter for a schoolboy is to be advocated by gas producers. The Peoples Gas Light & Coke Company of Chicago has already taken a step in this direction as the result of the recent allegations of excess charges being traceable to the fact that employees instead of reading meters, estimated consumption.

A suggestion has been advanced that the old style meter dials be discarded in favor of a meter showing in plain, bold figures the exact amount of gas consumed. For instance, instead of a meter-reader having to figure the consumption by reading three of four dials, he would simply have to jot down the series of three or four figures shown. The idea is to make meter-reading as simple as reading the season's mileage on an automobile speedometer.

Here is what John F. Weedon, editor of the *Advance Club News* of the Peoples Gas Light & Coke Company has to say about the subject:

"When a person is ill, to know accurately just what is the matter is half the cure. The other half consists in administering proper remedies.

"Even a cursory study of the gas industry from its inception reveals the fact that there is, and always has been, a peculiar antipathy or distrust in the public mind against 'Gas.'

"For everything that exists, whether psychological or physical, there is a reason. I presume history could be written on the causes which have combined to create and maintain this understanding between the public and those who have striven to give them good and valuable service. These causes are many and varied. They are mostly founded on lack of knowledge. Many of them may now be regarded as obsolete, but they have left their scars on our escutcheon.

"It is my personal opinion that much of our present trouble is due to what may be termed 'the mystery of meter measurement.' It is

this very thing that precipitates the greatest number of complaints about high bills. It is probably safe to say that not one customer in a thousand ever compares the reading on his gas bill with the reading on his meter.

"There are at least two reasons why gas consumers do not read their meters, thereby satisfying themselves that they have consumed the amount of gas represented on the bill. The two reasons are first, the meter may be difficult of access, and second, the lack of knowledge of how to read a meter.

"The lack of knowledge of how to read a meter is a matter we can help to some extent. Every customer who makes a complaint and as many as possible who do not, should be urged to read the dials on their meter and check up their gas bills.

"Reading a meter is a comparatively simple matter, nevertheless it does require some explanation, practice and understanding. It is not as absolutely simple as it should be. This, perhaps, is due to the fact that the industry has not demanded of meter manufacturers a meter with a direct reading dial.

"Such dials have been made, and are, I am told, in use in some big station meters, but as far as I can find out have never been applied to customers' meters. Direct reading meters show only the figures of consumption, just like the miles travelled show on a speedometer.

"The standard gas meter really is a remarkable piece of mechanism. In spite of many attempts by inventors with different styles of gas-measuring machines, it has never been improved or altered in any salient particular since it was first put into use in 1844.

"It now seems that an improvement might be made in the matter of the dials. What mechanical changes will be necessary will have to be left to the makers. The gain to the gas companies would be the almost entire elimination of errors through misread meters and the concomitant of complaints and annoyed customers. Also the ease with which consumers could, if they would, read their own meters and check up the consumption themselves.

"The change would greatly facilitate at least one very important detail of the business and render a 'course in meter-readings' entirely unnecessary."

Bi-monthly Billing Proves a Trouble Making Innovation

The Schenectady (N. Y.) Illuminating Company has had a bi-monthly billing system for gas and electricity in effect for the past five months.

It was installed as a temporary war measure and applied to all classes of consumers, except business houses, which were billed monthly. The company was forced into the bi-monthly system by a shortage of help.

A few of the customers like the bi-monthly system, but the overwhelming majority object to it largely on account of the amount of the bill. There is the further obvious disadvantage of having to follow up collections closer, as the non-payment of a bill makes the next bill carry a four months charge. No matter how reasonable a four months charge may be, the sum total is difficult to collect. In other words, the easy payment plan has as many advantages in selling gas as any other commodity or merchandise.

A very heavy increase in complaints is noticeable, due to this system. The Schenectady Company will re-establish the monthly billing system on March 1, as its personnel situation is partly relieved.

The JOURNAL is indebted to Victor Starzenski, assistant general manager of the company, for the foregoing information.

Richmond County Gas Company Loses $38,120 in 1918

In its condensed statement for the year ended Dec. 31 last the New York & Richmond County Gas Company showed a net loss of $38,120. This was due, it is understood, entirely to the increased cost of coal, fuel oil and other materials, and to the refusal of the public authorities to permit any advance in the price of the company's product.

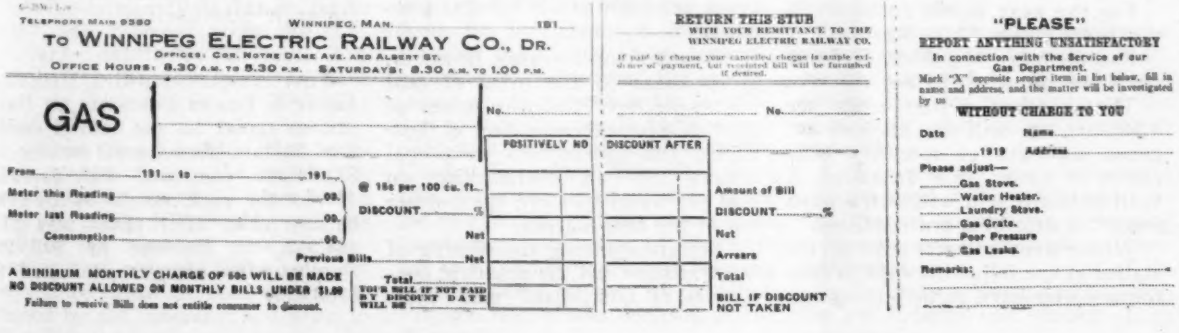
William J. Welsh, president of the company, is credited with having exhausted every means of reducing cost of production, but is unable to bring it down to the level of the compulsory selling price. Since the establishment of a base hospital on Staten Island the loss of the company has increased in proportion to the increase in consumption.

Making It Easy for the Consumer to Bring to the Notice of Gas Company Adjustments that Are Needed

Following out the policy to give satisfactory service in all departments, the Winnipeg (Canada) Electric Railway Company has adopted a system whereby particular attention will be given to see that the service to gas consumers is all that can be desired.

The accompanying illustration of the gas bill used by this company shows that an extra stub has been attached. When the gas bills are presented for payment this stub is attached, and if the consumer has any criticisms or suggestions to make they mark the stub.

Investigations and readjustments are made without charge, and this new departure in service has brought splendid results to the company.



TELEPHONE MAIN 9360 WINNIPEG, MAN. 191

TO WINNIPEG ELECTRIC RAILWAY CO., DR.

OFFICES: COR. NOTRE DAME AVE. AND ALBERT ST.

OFFICE HOURS: 8.30 A.M. TO 5.30 P.M. SATURDAYS: 8.30 A.M. TO 1.00 P.M.

GAS

No.

From 191 to 191

Meter this Reading 00.

Meter last Reading 00.

Consumption 00.

@ 15c per 100 cu. ft.

DISCOUNT %

Previous Bills Net

Total

YOUR BILL IF NOT PAID BY DISCOUNT DATE WILL BE

POSITIVELY NO DISCOUNT AFTER

Amount of Bill

DISCOUNT %

Net

Arrears

Total

BILL IF DISCOUNT NOT TAKEN

A MINIMUM MONTHLY CHARGE OF 50c WILL BE MADE
NO DISCOUNT ALLOWED ON MONTHLY BILLS UNDER $1.00
Failure to receive Bills does not entitle consumer to discount.

RETURN THIS STUB
WITH YOUR REMITTANCE TO THE WINNIPEG ELECTRIC RAILWAY CO.

If paid by cheque your cancelled cheque is ample evidence of payment, but receipted bill will be furnished if desired.

No.

"PLEASE"

REPORT ANYTHING UNSATISFACTORY

In connection with the Service of our Gas Department.

Mark "X" opposite proper item in list below, fill in name and address, and the matter will be investigated by us

WITHOUT CHARGE TO YOU

Date Name

191 9 Address

Please adjust—

Gas Stove.
Water Heater.
Laundry Stove.
Gas Grate.
Poor Pressure
Gas Leaks.

Remarks:

Increase Denied Janesville Company

The Railroad commission recently refused the application of the New Gas Light Company of Janesville (Wis.) to increase its consumers' rate 10 cents per 1,000 cu. ft.

The company had applied for an increase over a former raise allowed by the commission Feb. 6, 1918. The claim was that, as an emergency measure and to allow the firm to make necessary improvements in the service and take part in war activities, an increase was necessary.

Stating that, in its opinion, nothing exists in the financial condition of the company which indicates the existence of an emergency or which made the operation of the former increase unprofitable, the commission has refused.

Newport Rates Effective from Feb. 1

Beginning Feb. 1, the Newport (R. I.) Gas Light Company will charge for gas on the basis of the Rate Schedule now on file with the Public Utilities Commission and which became effective Oct. 7, 1918.

During the negotiations with the commission appointed by the Representative Council over the pending litigation, the company has been charging on the old basis, but on account of the cost of operation it is obliged to charge the legal rate now in force.

The following rates are effective under the schedule now in force.

Gas will be sold and regular meters installed at the following rates to customers who have signed an agreement for gas service:

For the first 5,000 cu. ft. $1.45 per 1,000 gross; $1.35 net.

For the next 5,000 cu. ft. $1.40 per 1,000 gross; $1.30 net.

For the next 40,000 cu. ft. $1.35 per 1,000 gross; $1.25 net.

For the next 75,000 cu. ft. $1.30 per 1,000 gross; $1.20 net.

The discount of ten cents per 1,000 cu. ft. will be allowed on gross amounts of monthly bills rendered under this schedule, if such bills are paid within ten days from the date bills are rendered.

Prepayment meters will be installed at the following rate to customers who have signed an agreement for gas service: rate $1.35 net per 1,000 cu. ft.

Minimum charge $6.00 per year per meter payable monthly and adjusted yearly in the month of December.

Public Service Company of Northern Illinois Files Petition for Rate Increase

The Public Service Company of Northern Illinois, on Feb. 10, made application to the Illinois Public Utilities Commission, for a 20 per cent increase in gas rates in forty-eight Chicago suburbs, including Oak Park, Evanston and Cicero.

The corporation is now charging $1.05 for the first 1,000 cu. ft of gas used, 90 cents for the next 2,000 cu. ft. and 80 cents per 1,000 cu. ft. for any additional gas used in any month.

The company wants permission to charge $1.25 per 1,000 for the first 2,000 cu. ft., $1.10 per 1,000 for the second 2,000 cu. ft used in a month and $1 per 1,000 for additional consumption in the same month.

A discount of 10 cents per 1,000 cu. ft. for payment within ten days after the date of the monthly bill is allowed at present and would be continued under the rate sought.

Included in the suburbs affected by the proposed rate increase are Arlington Heights, Berwyn, Evanston, Blue Island, Cicero, Desplaines, Maywood, Oak Park, Forest Park, Riverside, Gross Point, Park Ridge, Wilmette and other villages adjoining them.

The company serves all the territory outside the city limits as far north as Wilmette, as far west as Oak Park and Maywood and as far south as Blue Island. It is set forth that the cost of delivering gas to the consumers' households is now 64.5 cents per 1,000 cu. ft., leaving an operating profit of 25 cents per 1,000 cu. ft for the company.

The company foresees, however, an increase in the price of coal next year over the war prices of 1918 despite the cessation of hostilities and the reports from coal dealers that an overstocking on coal threatens to force the bottom out of the coal market.

"Notwithstanding the signing of the armistice and the practical conclusion of hostilities," said Vice-president Munroe in his petition, "there is every indication, in so far as the petitioner is advised, that petitioner has not yet reached the point of maximum cost in the production of gas and that the cost of coke in particular, one of the largest elements entering into the cost of such production, will be higher in the year 1919 than 1918."

The cost of manufacturing gas up to the point of storing it in the holder, according to Mr. Munroe, has increased from 25 cents per 1,000 cu. ft. to 47.8 cents per 1,000 cu. ft. for the first ten months of 1918, or practically to the close of the war.

With distribution cost added the total operating cost has increased from 46.8 cents in 1914 to 65.4 cents per 1,000 cu. ft. in the first ten months of 1918. According to the prices charged, this would represent an operating profit for the concern of nearly 100 per cent in 1914, and an operating profit of nearly 40 per cent during the war.

Mr. Munroe is pessimistic, however, concerning prices for coal and other materials in the present year. Instead of dropping below the level set in the war he believes they will continue to rise.

He estimates that the cost of operation will be 13.9 cents per 1,000 cu. ft. more in the present year than they were in the war year of 1918. This would bring the operating cost up to nearly 80 cents per 1,000 cu. ft. and give the concern an operating profit slightly more than 10 cents per 1,000 cu. ft.

The company, according to the petition, lost $110,000 on the construction of a plant to extract toluol from the gas to use in the manufacture of munitions. It spent $261,000 for the construction of the plant and its profit on sales of toluol for the Government's use were only $151,000 up to the time when the Government canceled its contracts because of the ending of the war. The plant, Mr. Munroe states, is now useless.

THE CONSOLIDATED GAS, ELECTRIC LIGHT & POWER COMPANY OF BALTIMORE report for the quarter ended Dec. 31 last, shows gross income of $3,434,500, compared with $2,604,427 for the same months of the year before. Net after taxes was $1,144,952, an increase of $93,992. Surplus after charges amounted to $586,493.

Bill Introduced to Abolish Missouri Public Service Commission Killed

The bill introduced in the Missouri Legislature by Representative Corbett providing for the abolition of the State Public Service Commission was killed by the unanimous vote of the House Judiciary Committee recently. The action of the committee eliminates the proposed measure unless the House by a majority vote orders it placed on the calender. This, which would at any time be an unusual proceeding, is made the more unlikely by reason of the fact that Republican Floor Leader John C. Dyott is also chairman of the Judiciary Committee.

The Corbett bill was distinct from the measures introduced by other representatives seeking to shear the commission of most of its important powers, especially as to rate regulation. However, the action of the judiciary committee on the first anti-public service commission bill that came before it will in all probability materially affect the chances of any other proposed legislation adverse to the life or powers of the commission.

Returns from U. G. I. to Philadelphia on Gas Profits Increase

Returns from the lease of the municipal gas works to the United Gas Improvement Company have now passed the $3,000,000-a-year mark. The returns made recently by President Bodine of the company to Controller Walton gives the city $813,219 for the last quarter of 1918, ending Dec. 31, and for the year the total income to the city was $3,048,-841.26. This is $825,841.26 more than the income from that source in 1917, and $358,841 above the controller's estimate for last year. The returns to the city from the lease for the last quarter of 1917 was $588,993.43.

The increase for 1918 is due largely to the advance in the rental rate, to the maximum of 25 cents to the city on every dollar's worth of gas sold by the company. For the five-year period ending 1917 the city received 20 cents on each dollar collected by the company, and prior to that date the rate was 15 cents. The present 25 per cent rental continues in effect until the expiration of the lease in 1927. The total volume of gas sold by the company in 1918 was 12,569,095,080 cu. ft, as compared with 11,229,642,160 cu. ft. in 1917. The last quarter of 1918 resulted in the sale of 3,431,714,980 cu. ft.

West Virginia Law on Natural Gas Will Affect Consumers of Natural Gas in Indiana and Ohio

News has been received by persons interested in the gas industry in Indiana that the West Virginia legislature has just enacted a law providing that all natural gas companies of that State shall satisfy to the limit of their ability all demands for gas made upon them by West Virginia consumers, both commercial and domestic, before piping any of their supply outside the State. The law affects several Indiana gas companies very materially, as it does Ohio and other companies, and will raise a very nice interstate question to be decided in all probability by some interstate authority.

The law affects many thousand domestic and industrial consumers of natural gas in Indiana and Ohio, to which States the natural gas is piped now in large quantities. About twenty Indiana towns and cities are dependent on the West Virginia gas for fuel in cooking and heating. Since the West Virginia factories are permitted to use gas without restriction, it may be expected that the time will come soon when the State will have no surplus for outside consumption.

As a conservation measure Indiana and Ohio factories have been prevented from using the natural gas this winter, the supply having been restricted to domestic consumers in these States, but it is reported that the companies distributing gas in Indiana and Ohio are anxious to let down the bars again to industries. Whether the United States fuel administration will permit the modification of its present order in relation to this situation in Indiana and Ohio was to be determined by the Pittsburgh hearing Feb. 17. Fuel administration representatives from the two Western States expected to oppose the modification of the existing rules, with relation to barring industrial uses, in view of the West Virginia law, it was declared at Indianapolis.

It also was understood that domestic consumers were ready to protest against the withdrawal of the order, limiting the use of the natural gas in Indiana cities to domestic consumers. The situation affects Marion, Muncie, Anderson, Tipton and many other towns and cities. E. I. Lewis, chairman of the Indiana public service commission, was one of the Indiana representatives who was to attend the Pittsburgh conference.

Report of Industrial Fuel Committee of American Gas Association

At the meeting of the managing committee of the Commercial Section, which was held on February 11, 1919, at association headquarters, the program of the Industrial Fuel Committee and a report presented by Mr. Thomson King, chairman, received special attention.

The outline of the policies which will govern the Industrial Fuel Committee's work as well as activities which it hopes to undertake during the course of the year is as follows:

1. To determine upon a general policy to govern and direct the activities of the committee and to define the scope and limits of its activities and authority.

2. To exercise supervision and direction over the work of the industrial fuel engineer.

3. To secure suitable papers on industrial fuel subjects to be presented to the convention of the association and in its "Monthly."

4. To recommend to the association whatever action seems necessary on industrial fuel questions.

5. To carry on investigations concerning the application of gas to industrial processes.

6. To investigate appliances and systems offered by manufacturers for use in connection with industrial fuel work.

7. To determine unit costs for the production of work by means of industrial gas and to determine the relative cost for production of the same work when competitive fuels are used.

8. To seek out and recommend improvements in the design and construction of existing gas consuming appliances and in methods of their application.

9. To make public and available to the gas industry the results of its investigation.

10. To prevent, as far as possible, the sale of inefficient and incorrect

gas consuming appliances, and the dissemination of incorrect and misleading information, and to standardize the industrial fuel work of the gas industry along the most efficient lines.

TENTATIVE PROGRAM OF WORK FOR THE CURRENT YEAR

The division of the committee into sub-committees, to consist of three to five men each.

(a) Committee on the improvement of atmospheric burner design and application; to investigate general type of atmospheric burners now in use for industrial application, to note their faults and deficiencies and to propose and define changes in design and application to overcome these. The term "burner" is to be understood to include the gas orifice, air mixer, mixing tube and burner proper.

(b) Committee on proportional mixing of gas and air, to consider and report on various ways of mixing gas and air, other than the atmospheric mixer, and to determine by theory and test the effect of good and bad mixing; to consider and report on the question of the positive pressure blower versus the centrifugal fan as a source of air blast, and in detail, on various systems of high pressure gas, one-pipe systems, etc.

(c) Committee on performance standards, to establish specifications to cover the performance of simple furnaces and possibly other industrial gas appliances whose performances admit of standardization, provided a man able and willing to carry on the work can be found.

(d) Committee on cost data to collect accurate records of the unit cost of production by means of gas heat as applied to various industrial processes, to present this data in such form that it may be of the greatest use to industrial fuel men throughout the gas industry, and to work out and present a standard form for the report of unit costs:—to collect data on the advantages, disadvantages and costs of the various fuels competing with gas in industrial processes.

In reporting the progress of the Industrial Fuel Committee, Mr. King stated that the first meeting of the committee had been held on Feb. 7, at association headquarters with the following men present: H. H. Clark, chairman; W. M. Cummings, H. O. Loebell, H. L. Reed, S. T. Willson, H. Vittinghoff, E. B. Myers, W. T. Rasch and I. B. Richards (in place of W. C. Buell). Besides the above mentioned members of the committee, Mr. Louis Stotz and Mr. Wm. Ehlers were present.

As a result of the deliberation of this meeting, it was agreed to make the following recommendations to the managing committee of the Commercial Section:

That Mr. Ehlers spend any time available for such work at headquarters, occupied with the dissemination of information regarding gas as an industrial fuel, through various methods of publicity suitable for reaching the manufacturers and other persons who carry on industrial processes requiring heat; that this activity be especially directed toward the preparation of articles to appear in trade journals other than gas, and of pamphlets on the application of gas to specific industries. That Mr. Ehlers' services be available to gas company members that may desire direct assistance in the field. Mr. Ehlers will offer them the benefits of his experience or put them in touch with the proper committee of the association and industrial fuel men among other company members.

If need arise, one or more industrial gas engineers may be employed to assist in carrying on field work.

That the educational work of the association, as applied to industrial fuel, be continued with, however, a revision of material and plan to take care of both beginners and more experienced men. To this end it was suggested that a junior and senior course be arranged and that the material be put into such form that it could be used by a class leader as a lecture.

That a fund of $1,000 be made available for expenses necessary for carrying out the work outlined for sub-committees.

In closing his report Mr. King remarked:

"We feel sure that there is a tremendous amount of most important work to be carried out during the current year. One of the greatest needs is the education of industrial gas men themselves, so that they may realize the extent and possibilities of the applications of their product. During the war, many companies that considered a customer who used a million feet of gas a month a large consumer, acquired customers whose use ran into a million per day and more. One of the lessons of the war should be that this business can be carried in peace times and that it is the large industrial firm which is the most profitable and most important field from which our companies can derive business and revenue.

"In beginning our committee work, we are fortunate in having a foundation on which to build, some data collected and reports made up by the proceeding committees of the A. G. I. and N. C. G. A. This data will be revised and enlarged upon and made available to our companies as soon as possible.

"In conclusion, we would request that our member companies give to the work of the committee their hearty and active support, especially by allowing their industrial fuel men the time to attend committee meetings and to carry on the work assigned to them. The activities of the committee as outlined will require conscientious and arduous work if they are are to be carried to a successful conclusion, and we feel that the results that can be obtained will, by their value to the industry, much more than repay the work and effort that must be put into them."

Milford Company Granted Rate Increase

In spite of the protests of the residents of both Milford and Hopedale, Mass., including the Selectmen of each town, the Gas and Electric Light Commission has handed down a decision permitting the Milford Gas Company to raise the price of gas on and after Feb. 1 from $1.67 to $2.10 per 1,000 cu. ft.

The company contended the high price of and the poor quality of coal for making gas, coupled with the abnormal conditions of labor and material, necessitates the increase.

Higher Rate in Effect at Holland, Mich.

The Holland City Gas Company has won its suit from the City of Holland, Mich. About one year ago the company made application in bankruptcy. The Grand Rapids Trust Company was appointed receiver for the company. The gas rates were then raised from 90 cents per 1,000 to $1.25. The city contended that the gas company could not take advantage of the bankruptcy law. This contention, however, was found faulty and the raise is now in effect.

Laclede Gas Light Company Net Decreased in 1918

For the year ended Dec. 31, 1918, the Laclede Gas Light Company reports gross earnings of $4,946,410, which compares with $4,800,265 for the previous year. Operating expenses, maintenance, taxes, etc., totaled $2,884,152, leaving a net income of $2,062,258. A reserve of $207,760 was placed aside for replacements and contingencies. Interest and preferred dividends aggregated $1,369,381, compared with $1,329,534 for 1917. Surplus for the year amounted to $485,117.

The company's cash on hand was placed at $177,069. Plants and investments amounting to $39,135,050 were recorded at the end of 1918. Common stock of $10,700,000 and preferred stock of $2,500,000 were reported among the outstanding liabilities.

List of Speakers for Illinois Meeting Completed

Although still close to a month away, the annual convention of the Illinois Gas Association at Chicago, March 18-19-20, already promises to rank with the best ever held by the organization. Secretary Horace H. Clark has just completed his list of speakers along with the subjects they will touch on during the meeting. A comprehensive discussion of the gas field is assured and all members have been urged to attend to take a hand in "Rejuvenating the Gas Industry."

Secretary Clark has already received bids for practically all the space available for the public service exhibits, which will be a feature of the convention. Eighteen spaces have been allotted and in anticipation of additional requests arrangements have been made for "overflow" booths. To date the following concerns are booked to exhibit: J. B. Clow & Sons, Acme Petroleum Company, P. H. & F. M. Roots Company, Rathbone-Sard Company, Reliable Stove Company, Eclipse Gas Stove Company, The Dayton Manufacturing Company, Equitable Meter Company, Long-Landreth-Schneider Company, Connelly Iron Sponge and Governor Company, Illinois Specialty Manufacturing Company, United Lead Company, Welsbach Company and Estate Stove Company.

Following are the subjects of papers which were previously mentioned in these columns, but for which authors had not been selected:

"Effects of the War on the Gas Industry," by William J. Hagenah.

"Gas Machine Factors Involved in the Manufacture of Carbureted Water Gas," by Robert B. Harper.

"Appraisals and Rate Making," by Cecil F. Elmes.

"Merchandising," by Fenton Kelsey.

"Effects of Condensing Systems on Quality of Water Gas and its By-Products," by Chester Heath.

"Firing Bake Ovens with Gas Fuel," by William C. Buttner.

"Making Gas Plants and Distribution Systems Do Added Duty," by C. C. Boardman.

"Industrial Gas as a Tonic for Utility Companies," by Edward J. Caspers.

"The New Business Department," by F. M. Lester.

"The By-Products Gas Plant," by George C. Lowell.

Fire at Ottumwa Plant

About midnight on Feb. 18 considerable damage was done by a fire at the plant of the Ottumwa (Iowa) Gas Company. The fire started in a newly loaded car of coke standing on a railroad siding.

Bill Introduced for Municipal Ownership of Utilities in Missouri

A bill which apparently seeks to pave the way for municipal ownership of utilities was introduced in the Missouri State Legislature last week by Senator Green of Kansas City. The proposed measure would give all cities of the State the power to acquire public utilities and issue bonds against such property. In acquiring such property, the bill recites, the city is not to pay anything for franchises.

In presenting the bill Senator Green said: "I have no doubt but what the measure will have to be amended in several particulars and I am open to conviction. I want the opinion of city officials on a proposition of providing enabling legislation for the municipal ownership of public service corporations.

Secretary Redfield of the Department of Commerce Favors Price Regulation

In an effort to stimulate consumption and keep labor employed, Secretary Redfield of the Department of Commerce has cabled President Wilson, asking him to appoint a special industrial commission which is to work out a schedule of price reductions. This is to be done first for the basic industries and later for the more highly developed ones.

The decision to ask for such a commission is the result of a series of conferences held in the office of Secretary Redfield, at which the various industries were represented as well as labor and the buying divisions of the Government. Other cabinet officials also have been in touch with the situation and the banking interests have been asked to help.

Secretary Redfield declares that every effort will be made to get the commission speedily to work, and suggests that it is likely that the steel industry will be the first one for which an effort will be made to work out price schedules.

The conferences were the result of the growing seriousness of the labor situation as reflected in all industries and were called by Secretary Redfield in the belief that quick stimulation would be necessary to keep factories running full time throughout the present difficult period.

Just how the price reductions are to be accomplished, the various conferences did not determine. That is to be left to the commission to work out. The only basic point laid down by the conference was that wages should not be touched.

It is planned to have the commission, however, find some way of putting sub-committees to work on the various industries. Both the high and low cost producers, the big consuming interests, and again the Government and labor are to be represented in the conferences that actually work out the price schedule.

Legally neither the commission nor the conferences will have any authority or power to fix prices. There is even a fear in some quarters that anything that might be agreed upon would run afoul of the Sherman and Clayton anti-trust acts. Attorney-General Gregory has been represented in some of the conferences and

has discussed the matter with Secretary Redfield, but all that can be said on this score is that the conferences will carefully avoid actual collision with the law. To give the prices some kind of official sanction, it is planned to have them announced as the prices at which the various Governments agencies are willing to go into the market to buy, and as fair prices to be recommended to consumers generally.

Although there has been much pressure from manufacturers generally to stimulate foreign consumption, the conferees agreed that they should touch upon nothing of that kind. Particularly were they careful to avoid anything which might be looked upon as a suggestion to end the blockade against the Central Powers and the Northern neutral nations which might help to create a big foreign demand for many of our products.

The work is to be strictly limited to attempting to work out a feasible reduction in general prices in such a manner that it will induce a present acceleration in actual buying and thus keep factories at work and labor employed.

It was planned to make the commission consist of six members, four of whom should be members of the Industrial Advisory Commission, which consisted of members and advisers of the old War Industries Board. The fifth member would represent the Government and the sixth labor.

Secretary Redfield gave out the following official statement to explain the purposes of the commission and the steps which have been taken to work out its program:

"Following a series of conferences between members of the Cabinet and others, a meeting was held in Washington on Feb. 5, which was called by the Secretary of Commerce to consider the industrial situation with particular reference to unemployment and the prospect of resumption of active buying. At this meeting there were present a number of the former heads of the more important divisions of the War Industries Board, representatives of various Government departments and others interested in the subject.

"It was recognized by the meeting that a considerable amount of unemployment existed and that with the return of the troops this unemployment would tend to increase. It was also recognized that in a large measure the unemployment was seasonal and due to the impossibility of carrying out open-air construction in the Northern States at this time of the year. It was, however, agreed that a second important cause was the reluctance of buyers to purchase more than their emergency requirements at the present level of prices, and it was felt that a determination of a post-war level of prices for basic commodities was urgently needed. It was the general opinion, illustrated by many specific cases, that a large latent buying power existed in the country which needed only a satisfactory level of prices to become effective. It was pointed out that the establishment of a satisfactory level of prices at this time offered particular difficulties, because war prices, as fixed, are recognized as abnormal; on the other hand, there is no prospect in the immediate future of the restoration of pre-war prices. It was felt that wages would remain on a higher level than before the European war and that no readjustment in the true wages of labor as measured by purchasing power should be attempted, though it was felt that as the cost of living is reduced labor would readily agree to the corresponding adjustments in money wages.

"If events are left to take the natural course, the establishment of post-war prices would probably be a difficult and protracted matter since prices of one commodity affect other commodities, and producers would wait for one another to take the first step. Such a course of procedure would involve much unemployment and a loss to both labor and capital.

"It was the sense of the meeting that the fine spirit of voluntary cooperation in industry which had proved such a valuable factor in the conduct of the war should be availed of to ease and expedite the processes of readjustment and that the manufacturers of the country would be willing to take the first step.

"After a full discourse of the situation, which occupied the greater part of the day, a resolution was adopted asking the Secretary of Commerce to seek the approval of the President to the appointment of a committee to deal with the situation. It was contemplated that this committee should call into conference the representatives of the basic industries of the country to examine conditions in industry with a view to the formulation of a scale of prices at which the Government departments and other buyers would be justified in buying freely, and at which the manufacturers would be willing to sell with a view to maintaining or restoring business activities to a full volume. It was felt that time was the very essence of the problem, and that therefore the appointment and action of the committee should proceed with all possible speed. It was believed that public announcement of the conclusions of such a committee would have a great value in establishing confidence in a level of prices, and would be accepted by bankers and others as a basis for credit."

Secretary Redfield summed up the conditions now confronting the country which made action necessary as follows:

1. Unemployment of labor, now large and rapidly increasing.

2. A stagnant condition of industry due to several reasons:

(a) Industries are not resuming production in full volume for lack of buyers.

(b) Consumers are not buying except for immediate needs or emergency requirements, because of high and unstable prices.

(c) Prices are high and unstable, due to the effects of the war, which interfered with the ordinary operation of the law of supply and demand.

3. Prices were inflated beyond the possibility of maintenance upon the same scale during peace time.

4. Prices advanced or were fixed to encourage maximum production by producers operating at the highest cost.

5. Prices advanced disproportionately, some showing increases over pre-war prices of 250 per cent, while others showed but 50 per cent.

6. These advanced prices largely obtain now, and, unless concerted action on the part of industry and the Government is taken, a long time will be required by the law of supply and demand to reduce them to the proper level.

7. This stagnant condition of industry is equally detrimental to labor, capital and the Government, and it is believed that industry will welcome an opportunity to put the prices of its commodities upon a sound and stable basis.

This stable basis, it is clear, must be upon a higher scale of prices than those of the pre-war period.

Big Well Has Been Discovered in Marion County, Kans.

The most important oil strike in many months in Kansas was reported recently in Marion County, when the Elmhurst Investment Company brought in a well rated close to 1,000 barrels on the Gilette farm six miles east of Peabody.

The new pool is fully nine miles from the Elbing pool discovered last summer in northwest Butler County and marks the farthest extension to the north in Kansas of the deep sand.

Personal Notes

JOSEPH A. WHITLOW, formerly chief of the department of gas, electricity, heat and water of the Missouri Public Service Commission, has resigned in order to accept the position of general manager of the Pine Bluff Company at Pine Bluff, Ark.

THE REMMERT MANUFACTURING COMPANY of St. Louis has been organized with a capital stock of $250,000, to take over the plant of the United States Safety Gas Machine Company, at Belleville, Ill., where it will manufacture a gas-heated electric washing machine, patents for which are held by William Remmert, president of the company.

RALPH ELSMAN has been elected vice-president of the Kings County Lighting Company, Brooklyn, N. Y. Mr. Elsman has been general manager of the company, which office he still retains, and his elevation to the vice-presidency comes as a recognition of his services.

Mr. Elsman has had a wide experience in the public utility field and began at the bottom of the ladder. He has been connected with some of the largest companies in the United States, among which might be mentioned the Pacific Gas & Electric Company. He spent nine years on the Pacific coast, and during that time rose to be a power in the organization. He returned to the East and assumed the general managership of the Kings County Lighting Company, and during his period with the company has made it one of the model organizations in the United States.

Not only is Mr. Elsman a figure in the utility business but he also is prominent as a business man of Brooklyn and his activities, since he became a resident of that section, have been wide and varied. In the utility field Mr. Elsman is a member of a great many organizations, including the American Institute of Electrical Engineers, National Electric Light Association, American Gas Association, National Red Cross Institute, and in addition is a member of the executive committee of the Empire State Gas & Electric Association and director of the Utilities Mutual Insurance Company. He also is a member of the Publicity Committee of the Empire State Gas & Electric Association.

RALPH ELSMAN

His policy of letting the public know the exact condition in the gas company has done a great deal for the utility business and has been one of the big reasons for the changing spirit with which the public is receiving the efforts of his company to serve.

SERGT. GEORGE HOSHIER, a former employee of the Laclede Gas Light Company of St. Louis, wearing a French Croix de Guerre, recently returned from France where he served with the Sixth Regiment of "Devil Dogs." For his bravery in the last battle of the Marne Sergt. Hoshier has been recommended for the Legion of Honor.

F. J. MEYER, of the Oklahoma Gas & Electric Company, Oklahoma City, Okla., won the first prize offered by the Natural Gas Association of America for the best "Wrinkles" during 1918.

GEO. N. ROOKER, manager of the Richmond, Cal., division of the Western States Gas & Electric Company, has been elected a director of the Richmond Chamber of Commerce.

M. G. LYON is the new manager of the Perry (Ia.) Gas Works. He is at present holding a similar position with the Iowa Railway & Light Company and will continue to act in that capacity. The local offices of the two companies will be consolidated.

CORP. CHARLES MILTON SNELL, of 1330 Eddy Street, Providence, R. I., arrived at New York City on board the Mongolia recently from overseas, where he had been attached to the Administrative Board at Paris. Corp. Snell volunteered in October of 1917. While a member of the 104th Ambulance Corps he was injured Apr. 22 of last year at Seicheprey and was in the hospital three months. His hearing was affected and he was transferred to Administrative Board duty. Before enlisting he was employed as fitter by the Providence Gas Company. He is 24 years old.

C. M. HINMAN, who has been assistant to the president of the Ohio Cities Gas Company, left recently for New York to have charge of offices for the company there. Until two and a half years ago he was manager of the Columbus clearing house.

THE WASHINGTON (D. C.) GAS LIGHT COMPANY held its annual meeting of the stockholders recently, at which the following directors were re-elected: Howard S. Reeside, Joseph Leiter, Ord Preston, John D. McIlhenny, James M. Green, Guy F. Whiting and Daniel Fraser.

O. W. MANKIN, recently of Eldorado, Kansas, is the new supervisor of the American Pipe Line Company, with offices at Pawhuska, Fla., taking the place of L. D. Thacker, resigned, and is a man of many years experience in the oil, gas and pipe line business.

COMMANDER GERHART V. SCHWARTZ, of the United States Navy, who in civilian life is president of the Van Zandt Gas Appliance Company of St. Louis, was among the visitors to St. Louis last week. Commander Schwartz, before entering active service in the Navy was for eight years commander of the Missouri Naval Reserves. He is now the commanding officer at one of the naval training stations. He was home on a ten days' leave and took this opportunity to look into his business affairs for the first time since our entrance into the war. Commander Schwartz expects to leave the naval service in about six months.

ROBERT H. STOCKTON, a director of the Laclede Gas Light Company of St. Louis and president of the Majestic Manufacturing Company, makers of gas-fired ranges, has made a gift of $100,000 to the National Benevolent Association of the Christian Church for the benefit of the Christian Orphans' Home at St. Louis. This contribution makes a total of $180,000 that Mr. Stockton has given to the orphans' home which was erected as a memorial to his wife, Mrs. Bettie Mae Stockton. The present building of the home was made possible by a $55,000 donation from Mr. Stockton several years ago. Later he gave $25,000 toward the building of a hospital in connection with the institution.

CHARLES L. HOLMAN, president of the Laclede Gas Light Company of St. Louis, has been appointed a member of the Workmen's Compensation Committee of the St. Louis Chamber of Commerce. L. H. Egan, vice-president and general manager of the St. Louis County Gas Company has been appointed a member of the Industrial Committee of the Chamber.

C. HOWARD STEWART, assistant to the secretary of the Leclede Gas Light Company of St. Louis, has been appointed chairman of the Public Utilities Committee of the Central Mississippi Valley Division of the National Safety Council.

ROBERT THOMPSON, of Kalamazoo, Mich., who formerly had charge of the Illinois territory for the Humphrey Company has been placed in charge of the St. Louis office of the company and will have charge of sales in St. Louis, the nearby Illinois towns and practically all of Missouri. Mr. Thompson succeeds A. M. Honnet, who after an eight-year connection with the Humphrey Company has become associated with the Sammies Oil Corporation at Oklahoma City, Okla. The St. Louis office of the Humphrey Company has been moved from the Laclede Gas Light Company's building to 619 North Grand Avenue.

MICHAEL JONES RUTTLE, for twenty years in the employ of the Consolidated Gas Company of New York, died from heart disease on Feb. 9.

Construction Notes

City of Duluth May Lay High Pressure Main

The City of Duluth (Minn.) Water & Light Department may lay an 8 ft. high pressure main of a mile or so in length on Woodland Avenue. The high pressure line will be for the purpose of feeding existing low pressure laterals.

To Improve Ventura Gas Plant

Between $15,000 and $20,000 is to be expended by the Southern California Edison Company on the gas plant in Ventura, Cal.

Rebuilding Water Gas Plant at New London

The Connecticut Power Company of New London, Conn., is rebuilding its water gas plant. The improvements consist of an addition to the present generator house; replacing a 5 ft. 6 in. set with a 7 ft. 6 in. set; installation of a P. & A. tar extractor; installation of an 8 ft. diameter condenser, and changing the inlet and outlet connections to the 100,000 cu. ft. relief holder from 12 to 20 in. with a similar change in the size of gas pipes leading from the generators to the relief holder and from the relief holder through the P. & A. scrubber and condenser to the purifiers.

It is expected that this work will be completed by May 1.

The JOURNAL is indebted to V. E. Bird, manager of the company, for the foregoing information.

Oshkosh Company Contemplating Extension of Gas Mains

The Oshkosh (Wis.) Gas Light Company is contemplating extending its gas mains and gas service.

Improvements to Be Made at Birmingham Will Cost $70,000

New Water-Gas Set to Be Installed Which Will Double Capacity

The productive capacity of the gas plant of the Birmingham (Ala.) Railway, Light & Power Company is to be more than doubled, according to Receiver Lee C. Bradley.

A petition has been approved for authority to purchase and install a new water-gas set. It will cost about $70,000, and will be installed within from four to six months.

The shortage of coal and other fuel, together with the increased prices which have obtained during the past 18 months, created an extraordinary demand for gas, with the result that, during the past cold weather, the margin of supply above demand has been very small.

Will Start Refilling Two Benches of Sixes at Pueblo Shortly

A contract has been let by the Pueblo (Col.) Gas & Fuel Company for the refilling of two benches of sixes, work on which will start very soon.

James M. Daily is general manager of the company.

Improvements Contemplated at San Diego

The San Diego (Cal.) Consolidated Gas & Electric Company has been contemplating the installation of one 20-ft. oil gas generator, having an approximate daily capacity of 1,375,000 cu. ft.

It is possible that during the coming year a new water gas generator will be installed having a capacity of approximately 1,000,000 cu. ft. Should this new generator be installed, two small existing oil gas sets will be used as carburetor and superheater.

Such mains as may be required by the normal increase in customers will also be laid during the coming year.

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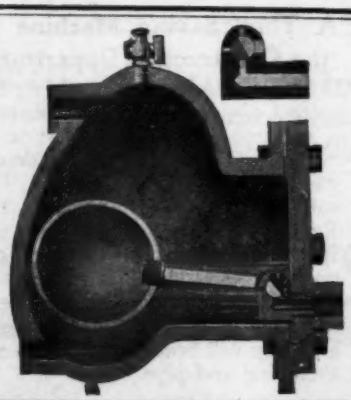
GENERAL STEEL CONSTRUCTION



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Guaranteed for Two Years' Service Always,
But Sent on Trial if so Desired

Circular No. 8 sent on request.

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San Francisco, Cal., 58 Sutter St.
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Boston, Mass., 10 High St.
Detroit, Mich., 814 Penobscot Bldg.
Milwaukee, Wis., 3 Bradley Bldg.
Columbus, Miss., W. F. Vinton
Minneapolis, Minn., Metropolitan Bank Bldg.
Omaha, Neb., 804 First Nat'l Bank Bldg.
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Pittsburgh, Pa., 1204 Hartje Bldg.
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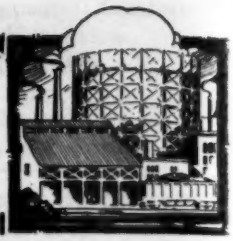
With The Equipment & Appliance Manufacturers



Conducted by Business Department of American Gas Engineering Journal

New Catalog Recently Issued by Sprague Meter Co., Contains Valuable Information for Every Gas Man

The Sprague Meter Company, Bridgeport, Conn., recently issued a very comprehensive catalog on the Sprague Cast Iron Gas Meter. It not only contains many illustrations showing the cast iron case and the principal working parts, but as a part of the catalog, is an illustration of every part, down to the smallest screw, each item being numbered, which is of great convenience in ordering any repair parts.

The accompanying illustration shows a cross section of the meter and the working parts. The method of attaching the diaphragms is such that they do not collect and hold the condensation which would cause rapid deterioration of the leather, but permits the condensation to drain into ample chambers provided for that purpose.

There are also large condensation chambers in the top gallery, which completely drain all gasways and keep the valve mechanism from any ill effects that condensation might have.

All adjustments or readjustments of the meter are easily done from the outside after the meter is put together.

The company also makes a prepay attachment, the outer shell of which is of cold drawn steel and seamless, which securely protects the contents.

CROSS SECTION OF SPRAGUE CAST IRON GAS METER

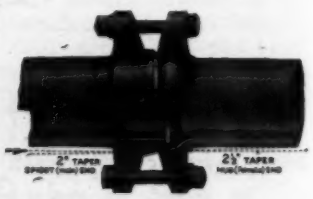
SPRAGUE CAST IRON METER

The cut-off of the valve is positive, and cuts off gradually, giving ample warning to allow the insertion of another quarter before the gas is entirely shut off. It is claimed that the mechanism is so constructed, that should anyone make a successful effort to destroy the money box, the meter proper would in no way be damaged, but would continue to register the correct amount of gas passed the same as a straight meter.

The catalog also contains complete instructions as how to regulate the meter, change the prepay rate wheel, set the tangent crank, etc.

Central Foundry Company Issues a Booklet Showing Illustrations of Many Difficult Installations of Cast Iron Pipe by Gas Companies

The Central Foundry Company, 90 West Street, New York, recently issued a booklet entitled "Universal Pipe in Every Service." It contains a large number of illustrations show-



THE "UNIVERSAL PIPE" JOINT

ing difficult conditions under which universal pipe has been loyal. The cut shown is a sectional view of universal pipe, showing the machined universal joint with the bolts in position through the lugs. Several pages are devoted to directions for laying their pipe. They announce that they will be glad to send a copy of this booklet to anyone, on request.

A Time Saving Machine for the Construction Department

The American Pipe Bending Machine Company, Boston, Mass., make a machine of special interest to the new construction and repair departments of gas companies. They call it the "Hercules Wonder Pipe Bender," and they state that the time required to bend cold 6-inch pipe on the new Model C is ten minutes. They make ten different sizes, bending from ⅛-inch to 6-inch inclusive, and they will bend solid bars as well as tubing and pipe.

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Consumers' Meters, Regular and Prepayment. Station Meter Work of Every Description. Meters Repaired. Meter Provers. Correspondence Solicited.

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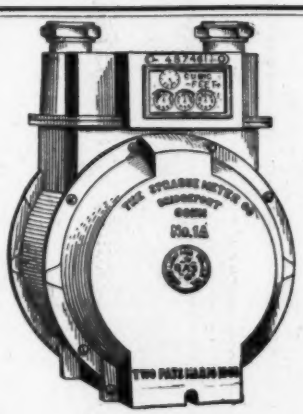

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Lessens Maintenance

With **Sprague Meters** it saves 65 per cent of the upkeep costs. Figure it on the years' installations —then write for proof.

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For Increased Capacity under Slow Speed Operation

ARTIFICIAL AND NATURAL GAS METERS, PREPAYMENT METERS, STATION METERS, METER PROVERS, COMPLAINT METERS, &c. SPECIAL ATTENTION TO REPAIR WORK

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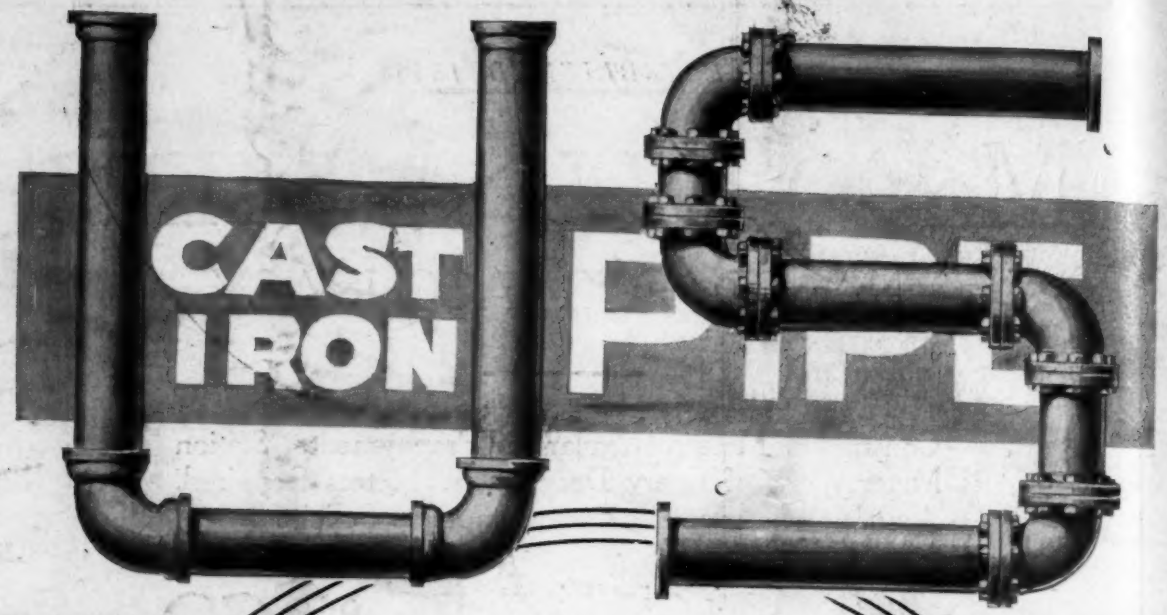

after all is said and done will outlast any other material ever used for piping purposes. It resists CORROSION almost indefinitely due to qualities inherent in the material itself—Cast Iron Pipe laid 250 years ago is still giving excellent service—the first pipe made in this country is still in use. What other pipe can show such a record?

U. S. CAST IRON GAS PIPE

is cast vertically in dry sand, *bell down*. This insures a uniform wall thickness, a machined spigot end and a true and flawless bell.

All Types—Bell and Spigot, Flange, Flexible Joint, Plain End and Threaded-for-Water, Gas, Sewers, Culverts, Industrial and Power Plant Piping.
Iron Castings in 1 lb. to 50 tons—Chemical Machinery, Hydraulic Cylinders, Castings for Machine Tool Builders.

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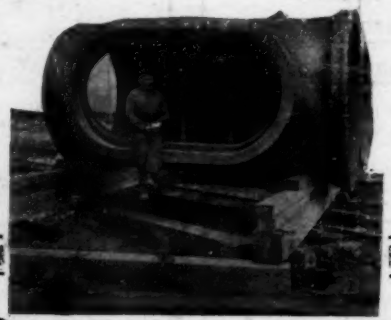
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Chicago—122 So. Michigan Boulevard
Cleveland—1150 East 26th Street
St. Louis—Security Building
Birmingham, Ala.—Amer. Trust Bldg.
San Francisco—Monadnock Bldg.
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